AN HBJ PUBLICATION

MARCH 1985/$2.00

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

1985 WEED CONTROL GUIDE

Expanded Coverage of Right-of-Way Weed Control

Exclusive Interview with Lady Bird Johnson on Wildflowers

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Economy Boosts Sales of Smaller Tractors

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MARCH 1985 VOLUME 24, NUMBER 3

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The Magazine of Landscape and Golf Course Management Since 1962

24 New Generation in Tractor Market

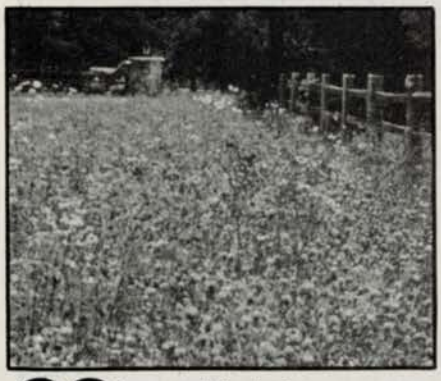
The under 40 hp tractor is proving a tough competitor to larger size models—both in productivity and cost.

28 A Dream Come True

The National Wildflower Research Center is well on its way to establishing significant research on the propagation of wildflowers. Savings in water consumption and mowing costs are only some of the advantages of using this long-overlooked groundcover.

32 First Lady of Wildflowers

An exclusive interview with Lady Bird Johnson, the driving force behind the National Wildflower Research Center.



38 Low Maintenance Alternative

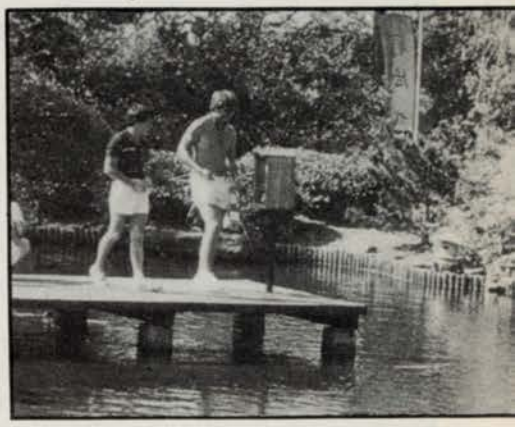
Dr. Leah Brilman of Jacklin Seed discusses the many uses of wildflowers in the professional landscape, including seed types and cultivation.

46 1985 WEED CONTROL GUIDE

The proper approach to turf, ornamental, right-of-way and aquatic weed control are thoroughly discussed in WT&T's annual guide.

96 Sea World Maintains High Expectations

Martin Schwerthoffer has his work cut out for him—maintaining the landscaping at Sea World in Orlando to the expectations of its thousands of visitors a year.



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NEWS/TRENDS

by **Bruce F. Shank**, executive editor

Reregistration costs may cause companies to drop old pesticides

Older pesticides may not be worth the $500,000 to $2 million investment to meet EPA's reregistration requirements industry insiders say. New pesticides, with patent protection and complete data packages at EPA, will take the place of older ones.

Older products tend to become commodities, with lower profit margins due to competition. Major investment in new data for older chemicals is just not practical insiders say. Newer pesticides, often with complete registration data and new, more efficient production facilities, provide more value added for manufacturers.

Yank firms add foreign products

The world gets smaller every day as U.S. chemical and equipment companies cut deals with foreign companies to market products here.

Sumitomo Chemical Co. Ltd. of Japan recently completed pacts with Velsicol Chemical and PBI Gordon. Velsicol will jointly market the fungicide Rizolex while Gordon will market the Japanese firm's insecticide Sumithion. Gordon also signed papers with the British company Farmura to market an organic fertilizer in the U.S.

Nearly all small diesel tractors are made in Japan today, even though many are painted U.S. colors. Italian engine and small power equipment companies are aggressively expanding in U.S markets. Bunton recently joined with JL Traktor of Denmark and also markets a greensmower made in Japan. Toro has recently signed manufacturing agreements with companies in Argentina and New Zealand.

The turf and landscape markets now have an international flavor.

Biotech heats up universities

Huge biotech research grants from chemical manufacturers have many university fund raisers carrying on like traders on the floor of the futures market.

Some say many solid vocational and specialty programs are being neglected in the heat of passion for biotech, like old wives in a harem with a new teenage beauty.

An untenured assistant professor was recently told he would have to go out and find endowment funds before he could hire someone to help maintain the research center. The instructor is expected to perform notable research, teach, publish, and take care of the research center virtually alone. The state turf foundation may have to provide funds just to have research continue.

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STAFF

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Linda Winick, Cleveland

OFFICES

ATLANTA
3091 Maple Drive
Maple Center One Building
Atlanta, GA 30305
(404) 233-1817

CLEVELAND
7500 Old Oak Boulevard
Cleveland, OH 44130
Editorial: (216) 243-8100

CHICAGO
11 East Wacker Drive
Chicago, IL 60601
(312) 938-2344

SEATTLE
1333 N.W. Norcross
Seattle, WA 98177
(206) 363-9200

DULUTH
120 West Second Street
Duluth, MN 55802
(218) 723-9200

MARKETING REPRESENTATIVES

Dick Gore
Atlanta (404) 233-1817
Ron Kempner
Atlanta (404) 233-1817
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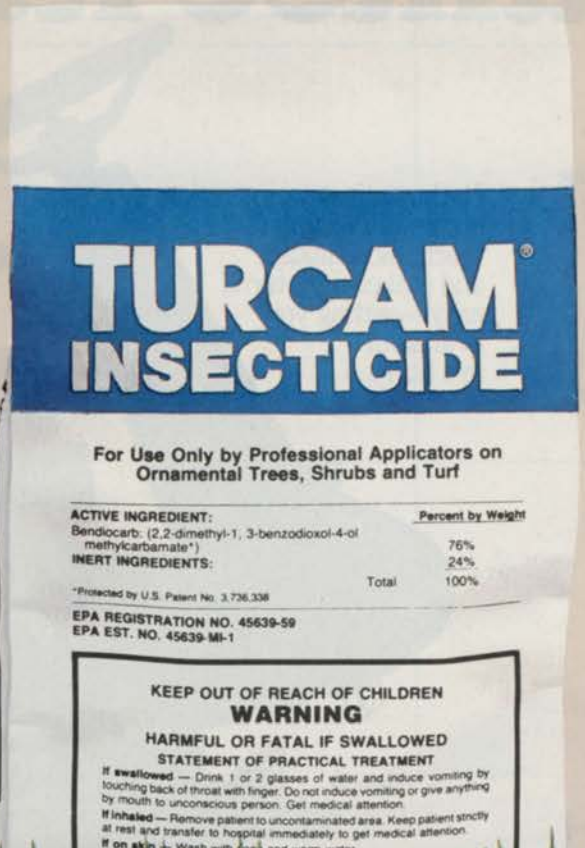

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The 20-hp F910 gives you the same great maneuverability for smaller turf-maintenance jobs.

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ASSOCIATIONS

ALCA attracts 460 to annual conference

Another Associated Landscape Contractors of America convention is history, but for most who attended the four-day conference at the Kona Surf Resort Hotel in Kona, Hawaii, the convention theme of "Profit in the Pacific" paid off in many ways.

Gail Morgan, executive director of ALCA, said the 460 total registrants learned from the educational sessions as well as from networking among themselves.

"I think we had just the right mix of formal educational sessions and enough time allotted for interaction around the swimming pool or in small groups. There's a lot to be said for learning from each other."

At a luau-styled installation banquet, President Rod Bailey said, "We're ready for growth and it will come. We've set a goal of 25 percent growth in '85. We're celebrating our 25th anniversary with that goal. Together we can do it."

The 26 exhibitors set up shop in the Kona Surf Convention Center and had a "fairly good" flow of traffic.

Warren Hamlin of B. Hayman, Hawaii, said booth traffic was good in general, but slowed down considerably in the afternoons.

ALCA board *meets in Hawaii.*

"We were pleased with the (exhibit floor) turnout," Morgan adds, "Most exhibitors didn't expect big turnouts every day. The exhibits had to compete with outside activities."

Plans are in the works for the Landscape Maintenance Division of ALCA and the Professional Grounds Management Society to co-sponsor a trade show next year in Milwaukee.

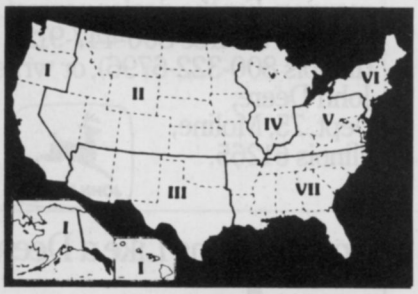
If certain details can be worked out, the two associations would jointly sponsor a trade show, while retaining their own individual educational sessions. Depending on the subject matter, some joint educational sessions may be planned. The boards of each have approved the plan.

ASSOCIATIONS

ALCA survey shows wages, procedures

A survey taken at the Associated Landscape Contractors of America Landscape Management Division conference in Atlanta in October gives a composite of the contractor and his company.

There were two parts to the survey—wages and procedures and benefits. Some of the results follow: (Results were listed by region).



Wages—Production manager, a high salary of $48,000 (Region III); low of $15,600 (Region VII).

Production supervisor, high $32,000 (Region I), low $11,400 (Region VII).

Route/Site Foreman, high $22,500 (Region III), low, $10,400 (Regions V and VII).

Equipment operator, high $45,000 (Region III), low $9,360 (Region II and V).

Crew member, high $15,000 (Region IV), low $6,500 (Region V).

Shop foreman, high $30,000 (Region V), low $10,400 (Region VII).

Mechanic, high $26,000 (Region V), low $9,360.

Procedures and benefits—The average survey respondent works eight hours a day, five days a week, beginning his day between 6 and 7 a.m. or 7 and 8 a.m. He gets five paid holidays, zero paid sick days and is given a salary increase annually. Overtime is paid weekly. His company provides him with a uniform and small equipment and hand tools and also pays his medical insurance. The respondent is involved in weekly management meeting with his supervisors/foremen. A weekly activities report is also given to each of his clients.

Equipment damage caused by neglect is the responsibility of the employee. Mowing crews are responsible for pruning and mulching in a majority of the cases.

Most firms answering the survey do not have published job descriptions for all jobs, but they do have a formal policy and procedures manual. A majority employs a full-time graduate horticulturist on staff.

Most companies pick up the tab for educational fees for job-related courses and give performance reviews every three months. Few companies provide compensation for employee-generated ideas that are implemented. A minority of companies had an incentive program for field personnel.

PESTICIDES

Sevin supply good, but questions remain

The supply of Sevin, the insecticide manufactured from methyl isocyanate, (MIC) by Union Carbide, is expected to remain adequate for the 1985 season, according to a spokesman for the company.

Late last year, methyl isocyanate leaked from a pesticide manufacturing plant in Bhopal, India, killing more than 2,000 people and stirring up controversy over the safety of pesticide manufacturing and use.

Tom Arnold of Union Carbide says, "Right now, we don't anticipate any shortages. We're cautiously optimistic but greater than normal uses could change our supply of Sevin. We're suggesting people cover their needs, but don't load up.

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Lure of OPEI Show grows, 100 new exhibitors to court buyers

The phenomenal momentum established by the first International Lawn Garden & Power Equipment Expo last year in Louisville continues unabated. More than 100 new exhibitors will court the 10,000 plus distributor/dealer buyers in Louisville this July 29-31. Nearby hotels are already booked up for the second show that boasts outdoor demonstration areas as well as air-conditioned indoor exhibits.

A fourth national association has endorsed the show, the Portable Power Equipment Manufacturers Association. The Outdoor Power Equipment Institute sponsors the show and the National Equipment Servicing Dealers Association, the Engine Service Association, and now the PPEMA endorse and promote the show.

Chemical manufacturers have now discovered the show and will play a growing role in it.

Interested distributors or exhibitors can contact The Kentucky Fair and Exposition Center, P.O. Box 37130, Louisville, KY 40233.

400 Case/IH dealers on the block

International Harvester and J.I. Case dealers in the same town are competing for more than business this winter, they are competing for the one dealership that will remain this spring.

Case dealers are basically short-line dealers who carry other short lines to round out their product mix. The new Case/IH dealers will be full-line, meaning competing short-lines will be dropped. But, the strongest distributor in the area, whether Case or IH, will be chosen.

The consolidation of Case's 650 dealers with IH's 1,400 dealers may shake up more than Case and IH dealers. Being one of 400 losers may not be all bad. Other agricultural equipment manufacturers are carefully comparing the Case/IH losers to their own local dealerships. One company's loss may be another company's gain, and who is going to sell the short lines dropped by Case?

Meanwhile, Deere is adding dealers, making a profit on reduced production, and its industrial division increased sales 37% in 1984. Allis Chalmers is looking for a mate, maybe Germany's Deutz or Canada's Massey Ferguson. The local IH dealer may be a Ford or Deere dealer by this summer.

In-the-Middle covers the turf and landscape distributor and dealer. Distributors are invited to send news items to Weeds, Trees & Turf, 7500 Old Oak Blvd., Cleveland, OH 44130.

Because of the questions hanging over the highly toxic MIC, production of chemicals like Sevin and Zectran (for ornamentals) has halted. Arnold says future availability of chemicals using MIC in the production process will depend on how soon Union Carbide can resume production.

Other pesticide manufacturers are strongly considering alternative methods of making certain products, following on the heels of the Indian mishap.

"This nation faces a quiet, but deadly crisis in the millions of pounds of hazardous air pollutants emitted each year, many of which are as toxic as MIC," Rep. Henry Waxman of California has said. Waxman is chairman of the House Energy and Commerce Subcommittee.

Looking to the future of pesticides, the representative of one manufacturer said, "Certainly there's alot of thinking going on about alternatives to methyl isocyanate but it's too early. We don't know what's going to happen."

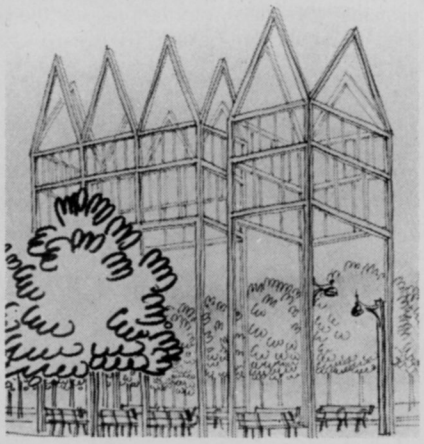
PARKS

Bronx parkway to get facelift

Architect Phillip Wild is anxious to see the design he worked up for the entranceway to the Pelham Parkway in New York implemented in coming months. Wild's design—a steel frame pavilion surrounded by suitable shubbery and plantlife—was chosen over 50 other conceptions, and earned the 28-year-old New York architect $2,000.

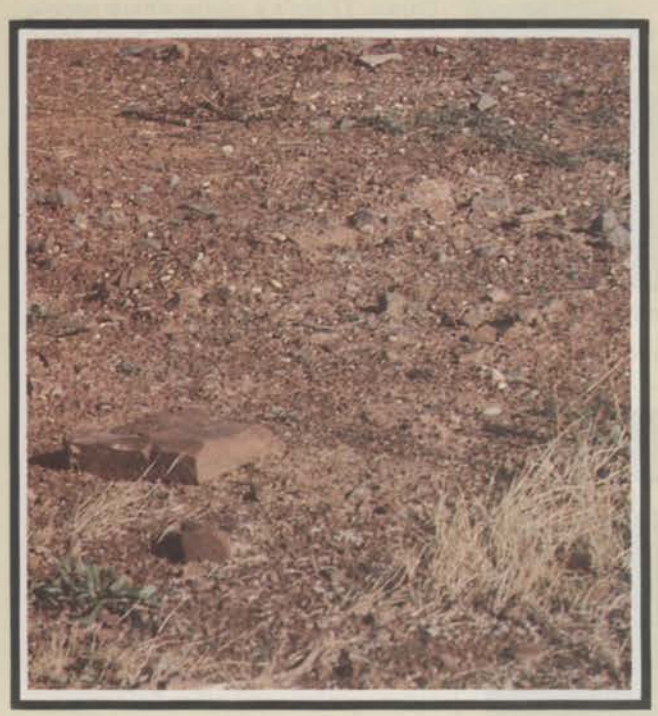
"The pavilion resembles the profile of a house as a reminder that the Pelham Parkway is a community of homes," Wild says. "It addresses the small scale issue of providing a functioning neighborhood park and the large scale issue of providing local identity."

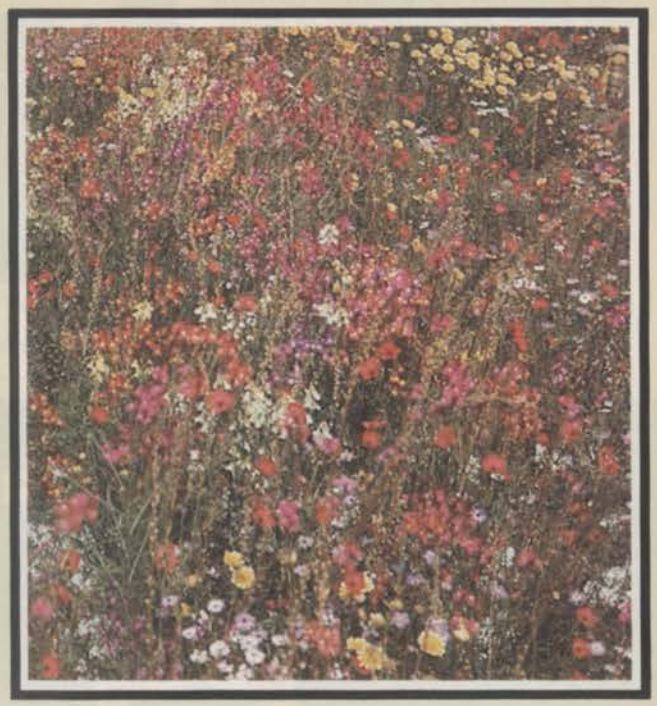
Wendy Fleischer, who administered the contest through the not-for-profit Neighborhood Initiatives



Wild's design *for the pavilion*

Create a Colorful Difference





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Development Corporation (NIDC), says efforts are under way to gather the estimated $350,000 to turn the design into a reality.

The contest was funded in part with public funds from the New York State Council on the Arts, contributions from Citibank, and NIDC.

"We were talking about what we can do to improve this area and we came up with this idea," Fleischer explains. "After driving through the Bronx with all the factories and freeways and traffic many people think that's all there is. But there's another Bronx. There's a place where people are proud of the neighborhood. Most people are really pleasantly surprised and we think the Gateway to Pelham Parkway will help."

Site of Gateway *to Pelham Parkway*

Fleischer says she's grateful the jury which choose Wild's designs "kept our budget and need for low maintenance costs in mind."

CHEMICALS

Velsicol, Japan co-develop Rizolex

Velsicol Chemical Corp and Sumitomo Chemical Co. Ltd. of Japan will co-develop and market Rizolex, a fungicide for control of soil-borne diseases such as *Rhizoctonia spp* and *Schlerotium spp.*

Velsicol will have exclusive rights to the development of Rizolex in the United States, Mexico and Canada. The chemical's primary use in North America will be in turf and ornamentals and cotton, peanuts and other field crops.

Sumitomo has also made arrangements with PBI Gordon to produce the insecticide Sumithion.

CHEMICALS

Seminar to difuse "time bomb"

The National Coalition For A Reasonable 2,4-D Policy will sponsor a one-day seminar "to arm members of the lawn care, forestry and agricultural industries" with educational and resource materials designed to support the industry's continued use of herbicides at a local level.

According to the Coalition, the lawn care industry is one of the most visible herbicide user groups in the country. Because of its visibility, lawn care businesses have become the focal point for an increasing amount of regulation. The Coalition points to "prior prenotification" and "posting" as a "potentially dangerous trend" in lawn care regulation.

The Survival Training Workshop is slated for March 12 at the Airport Marriott in Atlanta. The day-long seminar will examine current herbicide issues and is aimed at improving communications skills and generating better understanding between those involved with herbicide use and the general public.

Edith Efron, author of *The Apocalyptics*, a book about undisclosed cancer research facts, will be the keynote luncheon speaker. Registration fee is $65. For more information, call the 2,4-D Coalition headquarters, (312) 644-0828.

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Many of the big commercial tree-trimming companies have already switched to Limb Lopper chain saws, circular saws, and shade-tree pruners. It's easy for you to do the same. Just phone or visit your nearest member of Fairmont's trained, dependable Limb Lopper dealer network. Or write: Fairmont Hydraulics, a division of Fairmont Railway Motors, Bldg. B, Suite 408, 800 Roosevelt Road, Glen Ellyn, IL 60137. Phone (312) 790-1690.

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GOVERNMENT UPDATE

Karathane, not Kelthane suspended

In December *Government Update* we erroneously reported that Rohm & Haas had voluntarily suspended Kelthane until additional studies were completed. We had the common name right (dinocap) but the product name wrong, it should have been Karathane. Kelthane (Dicofol) is still on the market as one of the few effective miticides available.

Reagan proposes EPA $$ freeze

President Reagan's 1986 budget recommends a freeze on EPA's budget while increasing toxic waste cleanup funding. Water treatment programs will be cut to make room for toxic waste programs.

A number of bills generated in the aftermath of Bohpal will put pressure on funding for toxic waste handling and disposal programs and right-to-know legislation. Groundwater pollution is also a hot topic in Washington.

A special committee reviewing FIFRA programs is not expected to complete its recommendations before congressional budget hearings this spring. Minutes from the committee's meetings indicate strong interest in inert ingredients in pesticides, cancellation of pesticides with insufficient data supporting them, improving state local needs labelling, and authority of Federal residue standards in food over state standards.

Senators rekindle Harper's Ferry

The storm over the Harper's Ferry Bill, a bill described as the environmentalists' wish list, has not blown over. In fact, it has been scooped up by the leading liberal Democrats in the Senate, Cranston (California), Proxmire (Wisconsin), Metzenbaum (Ohio), and Leahy (Vermont). These men know how to use the media to generate support. It represents a considerably larger threat than legislation attempted in 1984.

EPA readies applicator protection

EPA's Director of Pesticide Programs Steven Schatzow announced standards for farm worker protection will be issued by this fall. Schatzow, who took over from Edwin Johnson last year, appears to focus his attention on exposure to pesticides, whether direct or indirect. Since he started, he has given special attention to residues and applicator protection. WT&T thinks he is on the right track, without carrying some grudge against chemicals. He could be swayed, like others, by the emotional pressure from the antipesticide lobby. Instead, like Ruckelshaus, he has a good grasp of the basic goals.

ASSOCIATIONS

New home for PGMS

The Professional Grounds Management Society got a full-time director the first of the year and also a new headquarters.

The oldest professional grounds management association in the country is now located at 3701 Old Court Road, Suite 15, Pikesville, MD 21208. The phone, (301) 653-2742, is unchanged.

Executive Director Alan Shulder told WT&T the new 400-square-foot facility is "far more modern and gives us a little more working space."

SOD

ASPA unveils marketing program

The American Sod Producers Association is intensifying its advertising and marketing plans to better acquaint sod producers and the public with the advantages of sod.

ASPA has produced a series of advertisements which its members can purchase and place in publications of their choosing as well as specialized brochures for their retail and wholesale customers. ASPA membership decals and bumper stickers will be available to further publicize the product and organization.

Current plans also call for ASPA to place advertisements in several national publications whose readers are landscape architects and contractors. The campaign theme is "Sod's Quality Advantages," and "Sod: The Perfect Cover."

For more information, contact ASPA, (312) 449-2890.

Sea World to open in San Antonio

Harcourt Brace Jovanovich, Inc. (HBJ), parent company of WEEDS TREES & TURF magazine, and other publishing and diversified interests including Sea World enterprises, has announced plans to build a fourth Sea World park in San Antonio, TX. The $75,000,000 facility will be ready the end of 1986. Sea World parks are currently in San Diego, Orlando and Cleveland.

The new park will offer 500 acres of displays and exhibits of killer whales, penguins, dolphins, seals, native and exotic fish and birds. The parks are also known for their creative and well designed and maintained landscaping.

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Circle No. 101 on Reader Inquiry Card

Names in the news

Jerome "Jerry" Faulring, president of Hydro Lawn, Gaithersburg, MD, was the first ever recipient of the Professional Lawn Care Association's "Man of the Year" award. **Bob Earley,** publisher of *Lawn Care Industry* magazine, making the presentation at the PLCAA Convention in Tampa says, "Jerry has done more than anyone else for the industry."

Sherwood A. Moore, a golf course superintendent since 1939 and recently retired superintendent at Winged Foot Golf Club, Mamaroneck, NY, received the New York State Turfgrass Association's highest honor, the Citation of Merit, during that group's recent conference in Syracuse.

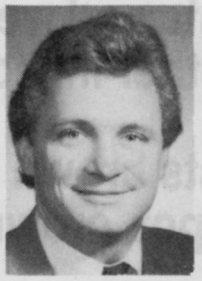
The American Sod Producers Association recently awarded research grants of $1,000 each to Auburn's **Dr. Ray Dickens** and Cornell's **Dr. Dick Smiley.** Dr. Dickens is to study the eradication of common bermudagrass through use of herbicides while Dr. Smiley will continue his study of Fusarium blight syndrome.

Steven B. Crick becomes the president of the Washington State Nurserymen's Association. Crick is vice president of Pacific Coast Nursery. **Bob Schmitz** is the 400-plus member organization's first vice president, **George Gillet** its second vice president, and **Marianna Ball** begins her third term as treasurer.

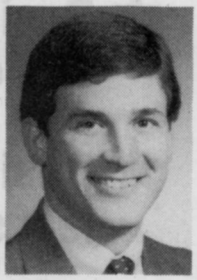
At American Association of Nurserymen headquarters they're saying goodbye to **Ray Brush** who's been with the AAN staff since 1958 and hello to **David Hamilton** a former professor of horticulture at Purdue University who will be replacing him.

David Kearsley takes over as national accounts manager of Rain Bird, the manufacturers of irrigation products. Kearsley is moving to Chicago, while **Trey Duren** steps in as his replacement as Colorado district manager.

Sally B. Callander has been named market manager of turf products by



David Kearsley



Trey Duran

Velsicol Chemical Corporation. Ms. Callander joined Velsicol in 1965.

Layton J. Overstreet, Jr. recently took over as superintendent at Marriott's Orlando World Center's 18-hole golf course, and **Bill Spence** as superintendent at The Country Club, Brookline, MA, site of the 1988 U.S. Open. Spence got the job after golfing heavyweight **Tom Watson** put a bug in the ear of the Brookline course's greens chairman.

Maag Agrochemicals, Inc., announced the appointment of **Louis F.**

Louis F. Gingins

Clair H. Palmer

Gingins to the position of president. Gingins started with Maag in 1947. **Clair Palmer** is the company's new marketing manager. Palmer formerly held positions with Cole Chemicals, Mobil Chemicals, and BASF-Wyandotte.

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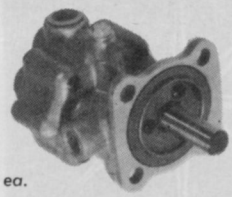

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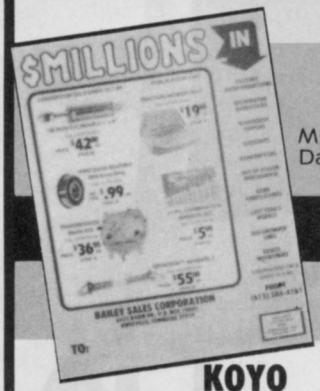

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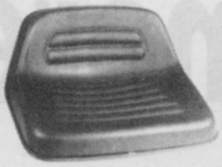

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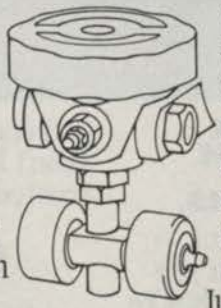

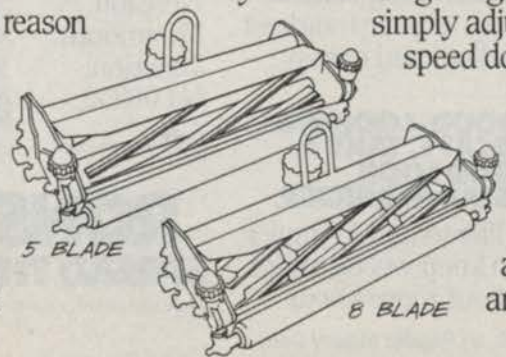

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Circle No. 182 on Reader Inquiry Card

LANDSCAPE LOG

by the Editorial Advisory Board, *Weeds Trees & Turf*

The gun sounds in April

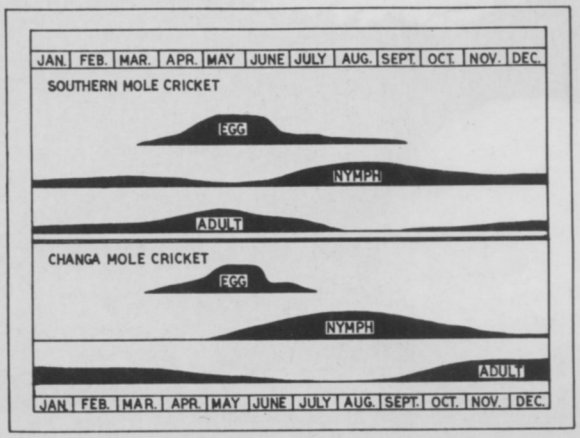
The gun sounds in April for nearly every landscape manager in North America.

Southern landscape managers say so long to ryegrass and hello to bermuda, centipede, St. Augustine, and bahiagrass.

April is one of the driest times of the year in Florida says Bruce Augustin. Irregularities in irrigation become evident and are sometimes confused as insect problems.

Mole crickets and chinchbugs are actively causing damage to turf. Contact insecticides, such as Mocap, Orthene, and Oftanol are useful for mole cricket control. Augustin recommends only curative control for chinchbugs with Dursban. Where resistance is recognized, switch to Pydrin or Baygon.

Golf course superintendents have begun postemergence weed control and aerification programs.



Mole cricket adults *are active in April. Adults controlled early in April or late March will be prevented from laying eggs.*

Southern home lawns should be verticut if thatchy in April. Augustin recommends delaying herbicide applications until later in the month, but fertilizer should go down early in the month (feed first, weed later after grass is actively growing).

In the Northeast after crocuses break through the frosty ground, forsythia and redbud blossom, and spring rains arrive, turf diseases, including leaf spot, stripe smut, and red thread become active.

Preemergence herbicides should be down, unless major reseeding is planned. Fertilizer and soil ammendments can be applied to correct pH, soil texture, and nutrient levels. Iron has become a popular soil ammendment lately.

White grubs, chinchbugs, billbugs, and black turfgrass ataenius controls should be applied where these insects were a problem last year.

Trees are breaking dormancy. They should be in place with perhaps a final pruning to remove winter damage made obvious by lack of buds or foliage. Trees and shrubs should be fed after flowering.

Preventative treatments for apple scab, fire blight, anthracnose, and leaf spot should be made where a problem. In areas where buds have not broken, a final oil spray for scale is possible.

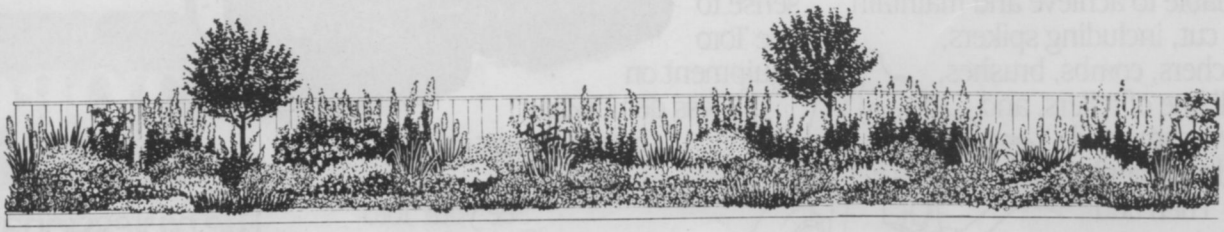
Forsythia and other early bloomers can be pruned back after flowering for shape and size. Rhododendron should be fertilized with an acidic fertilizer. Mulched areas should be cleaned up and dead and possibly diseased twigs and foliage removed. Renew mulch to two-inch depth.

In the Great Plains Bob Shearman recommends aerification and irrigation system testing. Final equipment checks should be made and the replacement part inventory replenished.

In late April, bluegrass billbugs become active. Treat where necessary. Fertilize turf if not fertilized late last fall. Begin broadleaf herbicide applications late in the month after preemergence crabgrass and spurge control early in the month. Leaf spot, melting out, and stripe smut diseases may require treatment.

Ornamentals susceptible to fire blight should receive streptomycin sulfate applications as they bloom. In late April, pines may require fungicide treatments for Diplodia tip blight and sycamores for anthracnose. Apple scab treatments should begin in April.

Editorial Advisory Board members are: **Bruce J. Augustin**, extension turf and water specialist, University of Florida, Fort Lauderdale FL; **Douglas Chapman**, horticulturist/director, Dow Gardens, Midland, MI; **Kent Kurtz**, professor of horticulture, California Polytechnic Institute, Pomona, CA; **Harry Niemczyk**, professor of entomology, Ohio State University, Wooster, OH; **Martin Petrovic**, assistant professor of turfgrass science. Cornell University, Ithaca, NY; and **Robert Shearman**, associate professor of turf, University of Nebraska, Lincoln, NE.



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Circle No. 143 on Reader Inquiry Card

Sales of tractors under 40 horsepower shine in an otherwise cloudy market, making landscapers and sundown farmers attractive to dealers and manufacturers.

The Bright Spot Of the Tractor World

by Ron Hall, assistant editor

Good news in the tractor industry, particularly for consumers, is the new generation mid-sized tractor which is finally gaining the recognition it deserves.

It may be one of the best equipment bargains on the market.

In spite of its compact size, this muscular rugged brute can bite off big jobs in all phases of the Green Industry. The availability of long lasting diesel engines, 4-wheel drive and other features such as power steering previously found only on larger agricultural tractors make this a different tractor than the small workhorse of dad's day.

"What we like to emphasize in this size tractor is the value of the product in terms of its purchase price," Tom O'Connor of Bolens says. "These tractors are very well built, their life expectancy is extremely long, and the customer is recognizing that they're a better value for his dollar."

Sales figures support O'Connor.

While sales of its bigger agricultural cousins have yet to climb out of the doldrums, sales of compact and mid-sized tractors have been on the rise. Moving 41,967 units in 1982, under-40 hp tractor sales increased to 45,595 in 1983 and to 47,689 through November of 1984. Sales of these smaller tractors now account for about 40 percent of all tractors sold, according to figures compiled by the Farm and Industrial Equipment Institute.

Manufacturers now provide tractors in an almost unbelievable variety of hp, filling what consumers formerly thought of as a "tractor gap". Much of this activity has been in response to the coming of age of the so-called "sundown farmers", professionals with four or five acres in suburbia and time to putter with them. Or as Bill Templeton, vice president sales of Kubota, notes: "Manufacturers didn't listen very well to their dealers. Now they are."

Super machines?

Larger than a lawn or garden tractor, the utility tractor offers automotive-type features for comfort and is a time saver for a bewildering number of grounds maintenance and landscaping tasks. The base price of these mid-sized tractors starts at about $5,500 (not much more than a hefty garden tractor with gingerbread) and goes up depending on the horsepower and model. A tiller may cost $1,500, a rear-mount mower $1,500, and a front loader another $2,000.

"These small ag-type tractors are just the thing if a guy wants a workhorse. They ain't no tinker toys," says Mike Young, parks and maintenance supervisor for Toledo, OH. "They can be the backbone of your operation."

Their versatility lies in the number of jobs they perform. That means attachments, many of which can be made operational in just minutes thanks to the universal Category One 3-point hitch. That's what separates them from the smaller garden tractor. The just as easily engaged spline-shafted Power Take Off (PTO) units—several manufacturers are now even offering mid-tractor PTO—allow the use of attachments from independent equipment manufacturers.

Tractor manufacturers and independent equipment concerns offer a full line of accessories for mowing (belly mounts, flail, gang reel, rear rotaries), plows, cultivators, disk harrows, and rotary tillers. Add front loaders, backhoes, posthole diggers, trenchers, wood chippers, log splitters, snow blowers, and snow blades, and you've got a working machine. Manufacturers continue to fine tune their offerings.

But if versatility is the utility tractor's number one attraction, performance is its bread and butter. "Customers are looking for the three 'P's' when it comes to equipment," a veteran lawn and garden equipment rep notes. "First comes performance, then parts and service, and then price. If the performance is there, and you can back him with parts and service, he won't mind spending a little more. Price isn't a customer's first consideration. It's downtime. He hates to pay for that downtime."

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Circle No. 167 on Reader Inquiry Card

Time For a Comeback?

Walk-behind tractors—more versatile than a mule and not nearly as stubborn

by Ron Hall, assistant editor

Gramps loved his mules. They were working animals.

When he wasn't following behind them yanking timber from the hillsides at his southeastern Kentucky homestead, he was churning the rich bottomland along the Big Sandy, barking "gee" and "haa" to get the stubborn critters to go where he wanted. Gramps' and his mules are long gone but mules of a different sort, two-wheeled mules, might still be the answer to a surprising number of commercial grounds maintenance or landscaping jobs.

The walk-behind tractor, today's mule, is available in diesel or gasoline and it doesn't depend exclusively on pulling power to get the job done. Power-take-off units working off 8 to 15 hp commercially tough engines and an expanding assortment of attachments give these beasts versatility.

Considering the walk-behind tractor exclusively as a garden machine might not be giving it the credit its due.

Quick fitting attachments can turn it into a tiller, mower (sickle bar, rotary or flail), wood splitter, sprayer, snow blower, grinder or shredder, sweeper, and even a pump. What makes these machines even more attractive for commercial users is their maneuverability. They can almost be turned on a spot and work between rows as close as 22 inches apart, two-wheelers offered by Mainline, London, OH, as close as 14 inches. In mowing, these tractors can be taken right up under trees and around posts.

"It's very maneuverable with its individual turning brakes," Jim Roberts, operator of Professional Landscaping in Long Beach, CA, reports of his walk-behind Ferrari tractor. "I use it for rotary tilling and grading. My speciality is residential and it's ideal for what I use it for." Roberts reports he can till a customer's 1,500 sq. ft. property in about 30 minutes.

Also, on some models the handlebars swing 180 degrees. That means you can use ground-turning attachments behind the wheels and then make a few adjustments and use mowers, brushes, snow blowers, or brushes in front of them.

"That's the beauty of these machines," Larry Phillips of Phillips Equipment in Minneapolis notes. "It is cheaper for a customer to have a single machine with attachments to garden and do all the other things that have to be done rather than buying a bunch of separate pieces of equipment."

Two-wheelers

It wasn't too many years ago that two-wheel tractors were commonplace on small farms and there was a number of American manufacturers. The walk behinds gave way to riding tractors, however, and now only two American companies manufacture commercial-sized two wheelers. Farmers and vineyard workers walking behind tractors remain a common sight in Europe, however, specifically Italy where many of the products in the U.S. market are manufactured.

Paul Sullivan of Mainline, supplier of a complete line of Italian-manufactured Mainline products, says there are more than a dozen two-wheel tractor manufacturers in Italy and competition to build efficient durable machines is intense. "A farmer might work his entire life on the same five-acre plot and he'll work them with a walk behind. He expects that machine to last a lifetime," Sullivan says.

Durability is high on any user's list and Jim Palmer of Louisville is a good example. He uses a 33-year-old American-made Gravely to turn more than 170 customer gardens each season, a 12-year-old Gravely ("my new tractor") with a 40-inch deck mower for brush cutting along the river-front properties of exclusive Louisville-area homes. "This guy asked me to cut a seven-acre lot; it hadn't been cut for four years," Palmer reports. "There were saplings and weeds in that field six or seven feet high and he thought it was a joke when I started mowing. But I cut it down. I haven't been able to tear these things (tractors) up."

Versatility saves money

While the two wheelers aren't cheap ($1,500 is a starting point for a smaller model with rotary tiller) they could offer savings in the long run because of their versatility. With a choice of about 20 attachments these tractors can be used for seed bed preparation in the spring, mowing in the summer, and snow removal in the winter. Sulkies are available if you want to ride and trailers for material transportation.

Bill Waggener of Professional Grounds Maintenance, Atlanta, uses his 8 hp B.C.S. primarily for breaking ground and mixing soil in planter beds, but he intends to put a sulky and trailer behind it this summer to move materials at an office complex. "I've got to move a lot of supplies on site without tearing up the roadways," he says. "The speed is fast enough and it's powerful enough to get somewhere without spending all day."

Many an oldtimer would have been happy to trade in his mules for a single machine that could do as much as a modern two wheel tractor. And he wouldn't have minded a little walking either. □

Manufacturers

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Ferrari, P.O. Box 5, 116 Paoli St., Verona, WI 53593
Garden Way Manufacturing, 102nd St. and 9th Ave., Troy, NY 12180
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LIMIT goes to work in the spring when you need help the most.

Spring brings a flurry of activity to turf care. It's a time spent planting, re-seeding, fertilizing, controlling weeds, raking, trimming, shaping, sodding, pruning and mowing...all at once. And if your operation depends upon summer help, it's too much, too soon.

LIMIT™ turf regulator, new from Monsanto, can help you cut hours from time-consuming spring and early summer mowings when grass growth is most vigorous. Properly applied in the spring, LIMIT will reduce growth of cool-season grasses (Kentucky bluegrass, tall and fine fescue, perennial ryegrass) for up to six weeks allowing you to re-deploy labor and cut back on fuel and machinery.

Its uses are numerous. LIMIT can be used on nonresidential sites such as cemeteries, parks, office and shopping centers, golf course roughs, industrial parks, institutional grounds, airports, and roadsides.

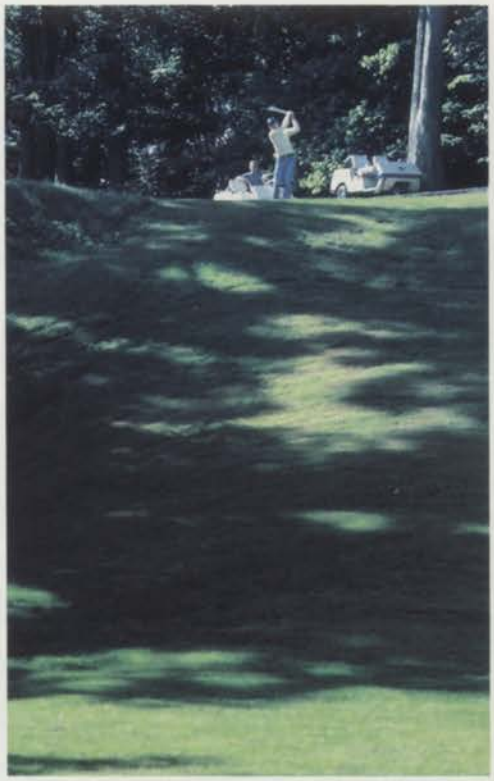
LIMIT can save valuable time.

LIMIT can be used in numerous ways to cut back on valuable labor hours...on broad expanses of low-traffic turf such as golf course roughs, campuses or institutional grounds and industrial parks as well as smaller, hard-to-mow areas where obstacles such as trees, shrubs or monuments are present.

Regardless of the turf, reduced growth rate reduces the urgency to mow and frees-up labor to take care of the multitude of jobs required to maintain your grounds.

LIMIT can help reduce the risks of mowing dangerous areas.

High-grade slopes, ravines and hills present tremendous mowing risks to both people and machinery. When you apply LIMIT to these difficult and dangerous areas you'll help cut these risks by reducing the need to mow. (And you can make these kinds of applications without fear of leaching.) You'll also save wear and tear on equipment and possible costly repairs that may occur from accidents. Not to mention the liabilities of personal injury.



ut cutting, save labor
y your work force.

LIMIT is versatile and easy to use.

Your options are open. LIMIT can be used with either water or fluid based fertilizers and in conjunction with commonly used turf herbicides.

Your choice of application equipment is also flexible permitting you to use the best method to fit varying needs. In fact, you can apply LIMIT with standard equipment used for other pesticides, including: multi-nozzle spray booms, single-nozzle Floodjets* or Teejets,* backpacks, hand-pumps or wheel-pump sprayers.

To apply LIMIT, you need no special skills or training. (Just follow standard procedures and precautions as directed by the label.) Application can be overlapped without quality loss or uneven growth... which makes it easy to treat landscaped or irregular-shaped areas where overlapping would be impossible to avoid.

*Trademark of Spraying Systems Company.

LIMIT is weather-proof.

LIMIT goes to work as it is taken up by the plant's roots and moves upward in the plant to the growing points where it slows down the growth. No longer do you have to treat your turf with one eye on the clouds and an ear to the weather report. Moderate rainfall or sprinkling will actually enhance its performance. In fact, turf managers have applied LIMIT in moderate rain and capitalized on wet spring weather to reduce turf growth later on.

Put LIMIT to work for you.

LIMIT turf regulator can indeed cut labor hours from mowing, thereby cutting costs at the same time. And it allows tur managers to use their time more wisely towards other projects that are more timely and require greater care. But the best thing about LIMIT is that it works... and it works consistently. It's been proven in trial after trial.

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looking for when the City of Toledo, plagued with high operating and maintenance costs, replaced much of its equipment with a two-pronged program (smaller hydraulic reel mowers and a fleet of small 4-wheel-drive diesel tractors) about three years ago.

"We wanted to downsize as much as we could," Young explains. "By going with the 4-wheel drive Kubota's we could downsize our equipment."

Kubota is the leading marketer of compact diesel tractors in the U.S., third in tractor sales of all sizes. When the first Japanese-built tractors made their appearance in the U.S. the seats were too small for American fannies, the pedals too small for American feet. But, the foreign manufacturers ironed out the bugs, and American manufacturers beefed up their lines with their own foreign-built products. Almost all utility tractors under 40 hp are now produced overseas, and users claim they are, regardless of company, comparably rugged in spite of differences in sales features.

"Everybody has a model that has certain standout features," Bolens' O'Connor says. "The customer just has to pick out the features he wants. The tractors themselves are comparable."

Ford offers full-time live hydraulics as a standard feature on its 1000 Series tractor, while John Deere offers a turbocharged mid-sized tractor, the 1050, and Yanmar can brag up its clutchless shuttle power shift. Other manufacturers offer tractors with their exclusive features.

Several dealers report 4-wheel-drive units are becoming more popular, and while 4-wheel drive may not be for everybody— particularly if mowing lawns is the vehicle's main use—it's almost a must for snow removal. It has been estimated that 4-wheel drive gives a tractor 35 percent more pulling power which might be a bargain considering it adds only about seven percent to its cost.

The City of Toledo's Young is part of the growing diesel trend also.

"Two things scare people about diesel—maintenance and costs," Young says. "They think they'll have to have a diesel mechanic, and diesels cost more initially, about $800 to $1000 more per engine. But within 2½ years we've paid for the engine in fuel savings alone. As far as mechanical work, I can't afford a lot of wrenching, but we figure we're going to get 3,000 to 5,000 hours before we have to go through these engines."

In addition to the Kubotas, Young's crew also uses an International Harvester 284 and an Allis Chalmers 5020, and he's just as enthusiastic about them. "Across the board I think all of these small tractors are very reliable," he says.

Dennis Hunter, grounds superintendent at Milton Hershey School, Hershey, PA, is eyeing replacements for his aging five-tractor fleet. "I'm leaning more and more to diesel because of economy and maintenance, and I'm thinking about going to even smaller equipment," he says. "I'm getting positive feedback from the people I talk to. I keep in touch with some of the golf course superintendents in this area and they're all happy with these small tractors."

Hunter gets a lot of use from the International Harvesters in his present fleet. Several are equipped with front loaders, one used primarily for pulling an 11-gang reel mower, another for final grading and, equipped with a York rake, for lawn work. He also uses tractors for snow removal and one, equipped with turf tires, for aerating, vericutting, and the fertilization of athletic fields.

Dealers, however, caution downsizing should begin with an accurate appraisel of long range costs, particularly in future labor and tractor maintenance costs. A short-term savings could turn out to be a long-term waste. For instance, a 35 PTO hp vehicle with a Woods RM90 rearmount mower cuts a 7 ½ ft.-swath and can handle about 4 ½ acres per hour. A smaller hp tractor with a 5-foot belly mount takes a much longer time to mow the same amount of acreage. That, of course, means more wear and tear on the smaller tractor, more fuel, and more manhours behind the wheel.

In Fort Myers, FL, Jack Klipfel, maintenance supervisor at The Landings LTD, reports he uses a Ford 445 with a bucket loader for scraping and general golf course work, while a more muscular Ford 2600 runs a Bush Hog. "We mostly stick with Fords," Klipfel says. "We're real happy with them. We've just had to repair or replace odds and ends. We haven't had to completely rebuild an engine yet."

The sales success of small tractors is the impetus for even more daring offerings, like Jacobsen's new 24-hp diesel-powered G-4X4. Shown to Jacobsen distributors this fall, the G-4X4 features an unusually low center of gravity (the operator sits down in the machine automotive style) and four-wheel steering. With its oversize low-pressure tires, the G-4X4 is targeted for the turf market, but its versatility is being touted. In addition to cutting grass with front-mounted rotary or flail mowers, the G-4X4 can operate a rotary broom and snowthrower as well as a rear-attached spreader. A dozer blade for plowing snow or moving materials is also available.

Jacobsen's equally new G-20D grounds and turf tractor is a more traditional design with a 45-hp diesel, while Kubota announces three new tractors, ranging from 21 to 27 PTO hp and all featuring direct-injection engines.

As manufacturers continue to compete by making their products easier to operate with such features as hydrostatic transmissions and cruise control, as well as more fuel efficient and maintenance free, the consumer only stands to benefit in his choice of a small workhorse tractor. **WT&T**

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NWRC Director Dr. David Northington *at the year-old headquarters of the national wildflower center.*

National Wildflower Research Center

Better Than the Dream

Barely a year-old, the National Wildflower Research Center has big plans for establishing significant wildflower research. Breaking new ground is nothing new to the people behind the project.

by Maureen Hrehocik, managing editor

Dr. David Northington likens it to staring-down a freight train.

You feel the tracks rumbling and sense the behemoth on the horizon, but it really hasn't come into full view. The momentum, though, is unmistakeable.

Northington is not referring to a puffing and grunting hunk of metal. He's referring to the increasing interest in wildflowers—those delicate splotches of color on roadsides and in fields that hardly register their existence with anything but the subconscious.

Yet, we know they're there.

Northington, 40, is executive and research director of the National Wildflower Research Center in Austin, TX. Barely a year old, the organization is surpassing even its own expectations for growth.

Really, it comes as no surprise, though, considering one of the country's most resourceful 71-year-olds is behind the project with capital, and more importantly, with love and an unsurpassed commitment—former First Lady Lady Bird Johnson.

"She is a vision," says Northington. "This Center is her dream. She also has a very practical grasp on things. Her knowledge goes beyond garden clubs.

"There are a lot of 'closet wildflower' lovers out there that we're just finding out about," he continues. "More than you'd ever imagine."

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Exclusive Interview

Lady Bird Johnson: First Lady of Wildflowers

by Maureen Hrehocik, managing editor

Managing Editor, *Maureen Hrehocik interviews Lady Bird Johnson.*

It was a typical Texas early spring morning—the kind that seems as if the sky couldn't be any bluer or the air any sweeter.

Three people set out in a car to "scout" wildflowers along the Austin countryside.

They came upon a large field of pink evening primrose. In the middle of it, like Attila the Hun plundering, was a large tractor lumbering through the primroses, plowing them under.

The driver of the car was ordered to stop. A spry septuagenarian stepped from the car and flagged down the tractor operator.

"Do you own this field?" she queried. She was told the young man's father owned it.

What ensued was an agreement with the owner to stop plowing the field. The lady would rent it until after the primroses had gone to seed.

The orchestrator of the agreement and the lady willing to lock horns with the goliath chewing up the primroses was Lady Bird Johnson.

Tenacity has never been a shortcoming of Mrs. Johnson.

The very genteel lady with the deep Texas drawl, clear brown eyes and ever-present smile, knows how to turn dreams into reality.

During Lyndon Johnson's administration, she was the driving force behind the Beautification of America campaign and left her mark, particularly in Washington, D.C.

On her 70th birthday two years ago she decided she had a very personal wish to do something for the country.

"Everything I had done up to this point was in some way connected to LBJ," she told WEEDS TREES & TURF. "Wildflowers had always given me joy and sustenance. Wildflowers can be enjoyed by so many—riding in a car we can see them along highway rights-of-way, public parks, in fields, just everywhere."

With that in mind, she donated 60 acres of land in Austin and $125,000 to start the National Wildflower Research Center. She also donated three years of her own time to promote it.

"I'm not real good at speaking or being self-assured, but I said I'd help in any way I could for three years."

If the former First Lady lacks any elocutionary skills or self assurance, she makes up for them with sincerity and with commitment.

Behind all that genuine good nature is a lady with a mission.

Mrs. Johnson revels in the beauty of wildflowers saying they've "filled me with a sense of wonder." But she also has a practical side.

She expressed concern over the amount of rain that fell in Austin in the fall because it was preventing seed to be sown at the research center. When a reporter mentioned to her about a golf course architect who had incorporated wildflowers into his golf course design, she wasted no time in pulling out a small notebook from her purse and jotting down his name and course location.

Her appetite for information for the research center is voracious.

And that's why "wildflowering," or driving around the countryside looking for wildflowers, is one of her favorite pastimes.

She describes the incident of coming upon the field of primroses as one of her "most delicious memories."

What experience hasn't taught her, trial and error has.

"Once we had the field rented, we didn't really know how to harvest the seed, so we just went at it."

Mrs. Johnson said that if she worked at the Center full-time, her favorite assignment would be as a scout.

"I love to go out and find stands of different species, collect seed and find out where different varieties are located."

But Lady Bird Johnson is very satisfied with her life just the way it is.

"I've gone through life with seeing eyes," she philosophizes. "I've traveled, enjoyed the change of seasons; it's all filled me with a sense of wonder. I wouldn't want to change a single thing in my life." □

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Northington acknowledges the Center has its work cut out for it.

Little if any research has been done on the propagation, species, diseases, hardiness or *anything* about wildflowers.

"At first, enthusiasm came from home gardeners and aesthetics. Now there are strong economic reasons for using wildflowers as well as increasing conservation awareness," explains Northington. "The biggest misconception about wildflowers is that they're for beauty only. The economy of them surprises people."

But it is their economic value that has started people sitting up and taking notice.

The National Wildflower Research Center is non-profit and dedicated to promoting and researching wildflowers and native grasses to further their use in three areas: improving the environment, for their economic value, and for aesthetic value. It also hopes to become a national clearinghouse for information about wildflowers and seed producers in the country.

"Every day something new is learned about wildlowers. We're not a university, we're not a commercial operation, we're not a bureacracy. Everything we have and will find out we're willing to share. There are no negative aspects to what we do here," Northington notes.

And, from the 1,200 inquiries the Center received from May to October of last year the demand for knowledge is out there. Only 28 percent of those inquiries came from Texas.

Northington says his highest priority is to establish "significant research."

How it all began

Lady Bird Johnson, well known for her efforts to beautify America during the Johnson administration, planted the first seeds of the National Wildflower Research Center. On her 70th birthday, she decided she wanted to give the country a present. She decided on giving and preserving a part of our national heritage—wildflowers—because, in her own words, they had given so much beauty and pleasure to her over the years. Her gift came in the form of 60 acres of land in Austin and $125,000 to build a research center, hire staff and begin research in the thus-far uncharted waters of wildflower propagation.

Northington is a botanist from the University of Texas at Austin. He began teaching at Texas Tech in 1971 and took over the curatorship of the E.L. Reed Herbarium at that time. He is now an associate professor of Biological Sciences. He is also director of the Texas Tech University Center at Junction, a biological field station.

"Essentially, all my scientific interest and research for the past 12 years has been on flowering plants native to the Southwest, many of which are roadside wildflowers," says Northington.

The Center is a modest but attractive building. It employs eight full-time employees and 24 volunteers and a Board of Trustees of more than 100. The Center became fully functional last May. There are plans to hire a full-time research director, build a 2,000-square-foot and 3,200 square foot research building.

Learning experience

All research data collected, mailing lists and any information collected is put on the Center's computer to insure quick and efficient retrieval when a request comes in for information.

Their capital now comes from grants, contributions and fundraising efforts of their development director.

The Center, besides housing the administrative offices, has a herbarium where seeds are weighed and sorted and a greenhouse with another one in the planning stages.

"All of our more sophisticated tissue culture work is done for us at the University of Texas," says Northington. "Quality control is of the utmost importance to us."

Northington is currently testing commercial wildflower mixes at half the recommended seeding rate and at twice the rate. He's also interseeding buffalograss around the Center and seeing how they compete.

"We don't know when to seed and when to irrigate simply because no research has been done up to this point."

Northington stresses what the Center is doing is independent research to prove the viability of wildflowers.

"I'm not advocating that all golf courses go out and plant their roughs in wildflowers. They have to be right for the situation."

Taking the lead

While other states such as Minnesota, Nebraska, Massachusetts, Oklahoma and California have wildflower programs, Texas has distinguished itself as the bellweather.

For one thing, the state is one of the hardest hit with a dwindling water supply. Wildflowers have proven to consume less water than turf and require considerably less maintenance, saving in mowing costs.

Texas is also fortunate in having its highway department, a member of its senate and some of its more prominent residents realizing the potential goldmine wildflowers can be.

Dallas resident Trammel Crow donates $25,000 a year to the city for wildflower plantings.

Bob Lanier, head of the 70,000 miles of highways in Texas estimates six million acre-feet of water is consumed by roadside vegetation. His department has shown as much as $8 million can be saved in mowing costs with wildflower plantings. His department doesn't mow until Texas' state flower, the bluebonnet, has bloomed.

In 1983, the highway department spent $32 million for mowing. A pilot program by the department using selective mowings along highway rights-of-way in 24 Texas counties reduced mowing costs by 24.8 percent and enhanced the native vegetation. Projected statewide, the program could significantly reduce the state's annual $32 million mowing cost. The entire state will be on the program this year.

Considering Texas' more than one million acres of highway rights of way, the decision seems to be an economically sound one.

"There's also a psychological advantage built in," he says, "People don't litter as much because the flowers are pretty."

Help is coming from political avenues as well.

Texas Senator Lloyd Bensen is responsible for a rider on a Highway Bill introduced by the Environment and Public Works/Transportation committee that would earmark 1/4 of all money spent on highways to be spent on wildflowers. He estimates the reduced maintenance of wildflowers would save taxpayers 25 percent, help property values, and beautify the area. One and a half million dollars has been appropriated for this purpose. Bensen said he has no doubt the bill will pass when Congress reconvenes.

What's ahead

A $3 million endowment is the goal for the National Wildflower Research Center. Donations, benefit luncheons, and fundraising have filled the coffers halfway to that $3 million goal. Fundraising efforts continue to go well.

Because the Center is so new, it needs everything. But, being less than a year old, the Center is well on its way to achieving its director's primary goal—that of establishing significant research in wildflowers.

It's no wonder baseball immortal Dizzy Dean's words come to mind for so many when describing the Center and its founder— "It ain't braggin' if you can do it." **WT&T**

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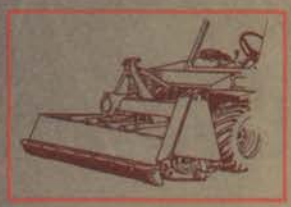

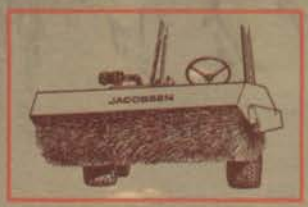

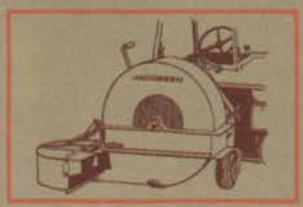

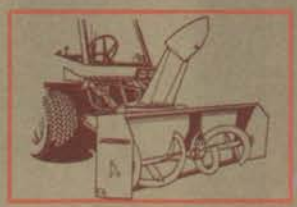

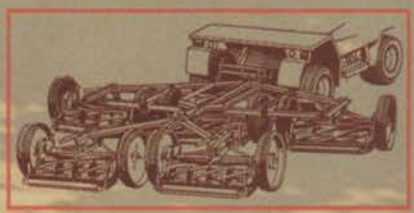

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Circle No. 130 on Reader Inquiry Card

Nothing is quite as impressive as a bare patch of ground bursting into color with a profusion of flowers.

An increasing number of roadside departments, landscape architects and golf course superintendents are discovering they can provide this color, while saving themselves water and maintenance costs, by planting wildflowers.

A wildflower is a flowering plant that grows uncultivated or wild in an area. If adapted to that area's climate and soils, wildflowers require little or no care. Some people consider only native plants as wildflowers, but some of the most popular species are actually naturalized introductions.

Wildflowers are increasing in use for a variety of reasons on many different sites. They can provide a ground cover that requires no mowing and adds color in non-traffic areas of parks, golf courses and home landscapes. Alone, or in combination with non-aggressive grasses, they can stabilize and beautify roadside cuts, mining sites, and other disturbed areas.

The mixes offered by many companies are designed to provide an ever-changing palette of colors from spring until fall if growing conditions are right. They can add a touch of color to the corner of your yard or create a meadow over large areas.

Planting

It is important to plant wildflower species adapted to your area. Many suppliers have regional or special-use mixes — designed for specific environments, while others include primarily wildflowers that have proven successful over a wide range of environments.

A mix should contain a balance of annual and perennial species. The annuals provide quick cover and color the first year and can usually be depended on to reseed themselves for flowering in subsequent years. Perennials provide flowers from the second year and beyond.

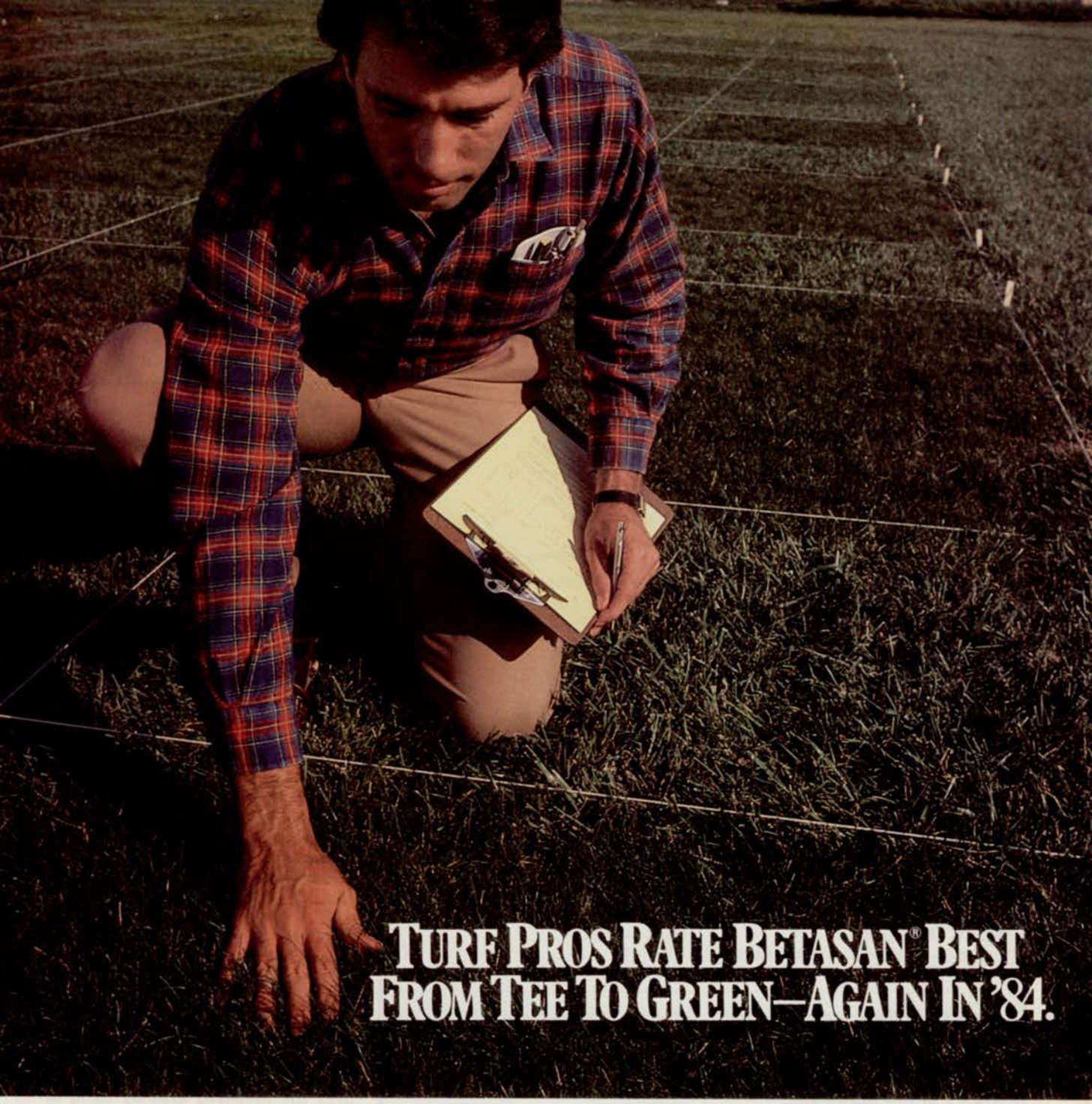
Wildflowers are often mixed with

Don't overlook these hearty, low maintenance, drought-resistant, colorful ground covers.

Wildflowers

by Dr. Leah A. Brilman

Wildflowers are often mixed *to provide a variety of color, wide adaptability, and quick cover with grasses. Photo courtesy of Wildseed Inc.*



In 1983, we surveyed state extension authorities and universities. We did it again in 1984 and Betasan, once again, came out the number one choice for crabgrass control and safety to turf.

That should come as no surprise. Comparing published test results from six different universities stretching across the U.S. from Rhode Island to California, no other herbicide consistently scores so high on crabgrass control, yet so low on injury to existing turf. No other preemergence herbicide even comes close for poa annua control.

Betasan is the only safe and effective product on bentgrass. It's also safe on established bluegrass, fescue, perennial ryegrass, Bermuda grass, Zoysia, bahia, centipede, St. Augustine and dichondra. That makes it safe for your tees, fairways and greens—the safest crabgrass control of all.

Betasan not only offers longer protection than most other herbicides, but with multiple applications, you can achieve control of goosegrass, barnyardgrass, redroot pigweed, sheperdspurse, lambsquarters and deadnettle, as well as crabgrass and poa annua. Keeping more weeds out of play. Longer.

For all those reasons experts say, "Betasan has always been best." For all those reasons, it still is.

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Sources for Wildflower Seeds

Company	Product
Applewood Seed Company 5380 Vivian St., Arvada, CO 80002 (303) 431-6283	Specialty and Regional Mixes, Individual Species
Clyde Robin Seed Company P.O. Box 2366, Castro Valley, CA 94546 (415) 785-0425	Regional, Season and Specialty Mixes, Individual Species
Environmental Seed Producers, Inc. P.O. Box 5904, El Monte, CA 91734 (213) 442-3330	Regional Mixes, Individual Species
Jacklin Seed Company W. 5300 Jacklin Ave., Post Falls, ID 83854 (208) 773-7581	Pinto Wildflower Mix, Appar Lewis Flax
Lofts, Inc. P.O. Box 146, Bound Brook, NJ 08805 (800) 526-3890	Pinto Wildflower Mix
Mangelsdorf Seed Company P.O. Box 327, St. Louis, MO 63166 (314) 535-6700	
Mellingers Inc. 2310 W. So. Range, North Lima, OH 44452 (216) 549-9861	
Native Plants Inc. 9180 South Wasatch Blvd., Sandy, UT 84092 (801) 943-3888	Mixtures, Individual Species
Norm Thompson Dept. 45-01, 13700 N.W. Science Park Dr., Portland, OR 97229	Meadow in a Can, Mixtures
George W. Park Seed Co., Inc. P.O. Box 31, Greenwood, SC 29647 (803) 374-3341	Mixtures, Individual Species
Plants of the Southwest 1812 Second Street Sante Fe, NM 87501	Mixtures, Individual Species
S. & S. Seeds 910 Alphonse, Santa Barbara, CA 93103 (805) 965-5243	Mixtures, Individual Species
Sharp Bros. Seed Company P.O. Box 140, Healy, KS 67850 (316) 398-2231	
Vaughan Seed Company 5300 Katrine Ave., Downers Grove, IL 60515 (312) 969-6300	Instant Glamour Mixture

grasses to add soil stabilization and erosion control. It is important that the grasses used are clump types and not overly aggressive or the wildflowers will be crowded out.

In the Northern United States, chewings, sheep or hard fescue are often used with wildflowers, while tall fescue is often used in the Southern United States. Certain native grasses, such as Nezpar Indian ricegrass, sand lovegrass, side oats grama, bluegrama, etc., are sometimes combined with wildflowers, but these often grow slowly and are less useful for soil stabilization, although they can be very attractive.

Wildflowers are increasing in use for a variety of reasons on many different sites.

Grasses that are not suitable for use with wildflowers, unless wildflower islands are created, include many of the turf and forage grasses developed for their aggressive nature such as Kentucky bluegrass, annual or perennial ryegrass, orchardgrass, timothy or smooth brome.

Establishment

The key to obtaining a good wildflower stand is proper establishment. Nature may depend on just scattering the seeds on the ground, but you should not risk a thin stand.

The first step to obtaining a good stand is soil preparation. The soil should be tilled using a plow, rototiller or hoe depending on the size of the area. If needed, soil amendments such as peat moss may be added to improve moisture and air-holding capacity of the soil.

The seed may be broadcast sown over the prepared area by hand or with a broadcast seeder if the area is small. For larger areas it is recommended to drill the seed in to a maximum of 1/4-inch or employ hydroseeding/hydromulching. If the seed is broadcast sown, it should be covered with a light layer (maximum 1/8-inch) of peat moss for mulch or lightly raked in. (Some seed will show.)

The most critical period for establishment is the next 4 to 6 weeks when the seeds must receive adequate moisture for germination and early growth. If irrigation is not available, it is best to plant the seeds before periods of natural rainfall. In California and many of the southern states the

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best time to seed is the fall. The fall (8 to 9 weeks before frost) or early spring is the best time for northern states. The temperature and light regimes during these periods are also usually optimal for germination and growth because these are the natural germination times for wildflowers.

If a dry period occurs or the seeds are planted during a less optimal period, supplemental irrigation is recommended for satisfactory performance.

Wildflowers are often mixed with grasses to add soil stabilization and erosion control.

Fertilization is not recommended for wildflowers unless the soil is extremely sterile. Fertilization primarily encourages weed growth. If weeds are a problem, till the soil and water to encourage weed germination, then spray with a non-selective contact herbicide such as "Roundup" at least one week prior to planting.

Try not to disturb the soil again because this will just bring more weed seeds to the surface. Ample moisture and high germination of your wildflowers is your best tool against weeds.

Seeding rate

A minimum seeding rate is 4 to 8 pounds per acre or 1 ounce per 250 square feet depending on the mix used. This will provide 40 to 72 seeds per square foot. If a denser stand is desired, especially for more color the first year or in a smaller area, it is recommended to at least double this seeding rate.

You must also have patience with wildflowers. Although some will bloom within 6 to 8 weeks of planting, many must mature much longer before they can flower. This is especially true of the perennials which may require a few years before an optimum stand is achieved. After establishment wildflowers require minimal care.

For optimal growth and flowering under drought conditions, supplemental irrigation is recommended. Even under these conditions, if no irrigation is available, they will persist and bloom when natural rainfall is available. Often they have more extensive root systems than many traditional flowers so they will perform with much less water.

Many landscapers and highway departments will mow wildflowers once a year in July, after the seeds have set, to improve the appearance and scatter the seeds for reseeding. Wildflowers will tolerate additional mowings, but should not be mowed after March or bloom will be reduced. Mowing, however, is not necessary!

As interest in wildflowers has increased so has the research. In 1983, Mrs. Lyndon B. Johnson and associates founded the non-profit National Wildflower Research Center in Austin, TX, to investigate and promote research on wildflowers. (See related story, this issue.)

The states of Texas and Massachusetts have both performed extensive studies on establishment of wildflowers on roadsides. Massachusetts has even experimented with utilizing wildflower sods for steep slopes.

Some of the perennials may require a few years before an optimum stand is achieved.

Seed companies have been researching improved establishment procedures, as well as improved methods of growing and harvesting the seed to increase the supply and reduce the costs of the seed. In addition they hope to make additional varieties of wildflowers available.

If you are only going to seed a small area with wildflowers, you can buy small packets of mixtures or single species from your local garden center. However, for larger areas it is recommended you contact one of the companies listed on the preceeding page for larger seed quantities (this list is not intended to show all companies that may market wildflowers).

Most of these companies market wildflower mixtures adapted to certain regions or conditions in quantities of one pound or greater for $20 to $48 per pound. Quantities greater than one pound are often sold at a discount. A few of the companies sell as little as one ounce for $5 to $6. It is recommended you write or call the companies that have products that interest you.

Whatever the cost, wildflowers will bring a profit to you—first due to decreased maintenance cost, and second from the pleasure they bring to others. **WT&T**

Dr. Leah A. Brilman is research director, Jacklin Seed Co.

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No turf or landscape will remain weed-free without the intervention of man and his technology. This fact of nature has provided, and will continue to provide, work for the landscape manager.

Manmade landscapes, left alone to heat, drought, poor soil, shade, and traffic, will surrender to weeds.

The landscape manager's job is to shift the balance in favor of the desirable species and keep it that way. He does this by putting stress on the weeds and reducing the stress on the desirable plants.

Stress can come from many sources: poor soil; excessive shade, slope, moisture, wind; improper plant selection; and even maintenance practices such as mowing too low or too much at one time, using unnecesarily heavy machinery on turf areas, overirrigating, and overfertilization. Beneficial practices such as aerification or cultivation at the wrong time increase weed pressure.

Correction of stress factors is an important component of a weed control program. If stress can't be corrected, plants tolerant to the stress should be selected and planted in the area.

In this Guide, weed control is divided into four categories; turf, ornamental, rights-of-way and aquatic. Each area requires a separate approach, even though many of the chemicals and weeds are the same. It's important that a landscape manager approach each in the proper way.

Warm-Season Turf

by Ray Dickens, Auburn University, Auburn, AL., and **Euel Coats**, Mississippi State University, MS.

Bermudagrass is the dominant turf species in warmer climates. In general, herbicides that can be used on bermudagrass can be used safely on zoysiagrass. However, special attention should be paid to herbicide labels regarding applications to centipedegrass and St. Augustine, which are similar to each other in their tolerance to herbicides.

Summer Grass Weeds. Large crabgrass and dallisgrass invade more turf acreage in the southern United States than any other grasses. Germinating seeds of both can be satisfactorily controlled with benefin, bensulide, DCPA, pendamethalin, atrazine, and simazine. Certain formulations of atrazine are labelled for use on St. Augustine, zoysia, and centipede for sod production while other commercial products containing atrazine are labeled for homeowner use. A combination of acetamide (Dual) and either atrazine or simazine is currently being tested for effectiveness.

Golf courses *present a wide assortment of weed control challenges.*

Only asulam is used for postemergence control of crabgrass and dallisgrass in St. Augustine. MSMA and DSMA are effective postemergence herbicides for these weeds in bermudagrass. The arsonates are used almost exclusively for dallisgrass control in bermuda and zoysia.

Goosegrass is the most difficult summer grass to control in the South. Timing of application of preemergence herbicides is of paramount importance if control is to be achieved. We generally think goosegrass starts germinating in significant quantities four to six weeks after crabgrass. However, this can and does vary.

If application of a preemergence is delayed, large crabgrass will escape because it germinates earlier than goosegrass. In bermudagrass and zoysia, large crabgrass can be controlled quite effectively with postemergence applications of the arsonates. Use of preemergence herbicides would appear to be a better approach to goosegrass control than postemergence control with arsonates.

Oxadiazon (Ronstar) gives excellent season-long control of goosegrass. Research has shown postemergence applications of MSMA plus metribuzen (Sencor) gives good control of goosegrass.

Sandbur and bahiagrass in bermuda and zoysia can be controlled with arsenicals. There is no selective control of torpedograss in southern turf at the present.

Both annual and perennial sedges are problems in the South. Purple nutsedge and, to a lesser degree, yellow nutsedge are the most severe problems. Multiple applications of arsenicals or an arsenical/phenoxy combination are generally recommended for purple nutsedge, only on bermuda or zoysia. Basagran can be used for yellow nutsedge control.

Summer Broadleaf Weeds are a problem throughout the South in turf, but not to the extent of the grassy weeds, such as dallisgrass, large crabgrass, and goosegrass. Prostrate spurge and Virginia buttonweed are important and difficult to control broadleaf weeds. Multiple applicattions of 2,4-D plus dicamba, Trimec, or Trex-San are almost always necessary. Researchers suggest the use of a nonionic surfactant with the herbicide.

Winter Grass Weeds. Annual bluegrass is by far the most severe grassy weed infesting southern turf

continued on page 50

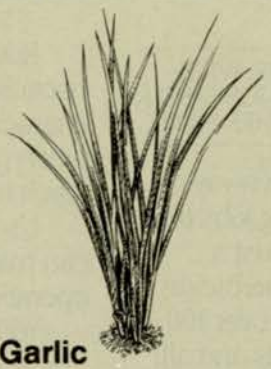
Grassy Weeds

One of the biggest challenges a landscape manager has is to remove undesirable grass from a desirable one. The following grasses have become notorious for being difficult to control.

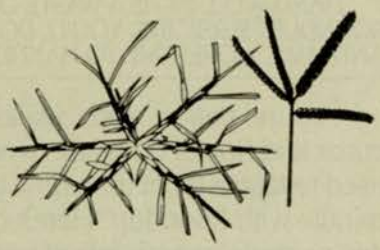
Annual Bluegrass (Poa Annua)

Crabgrass

Nutsedge

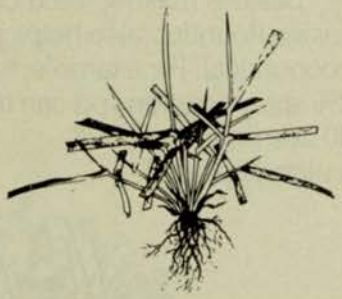


Wild Garlic



Goosegrass

Quackgrass



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Roundup
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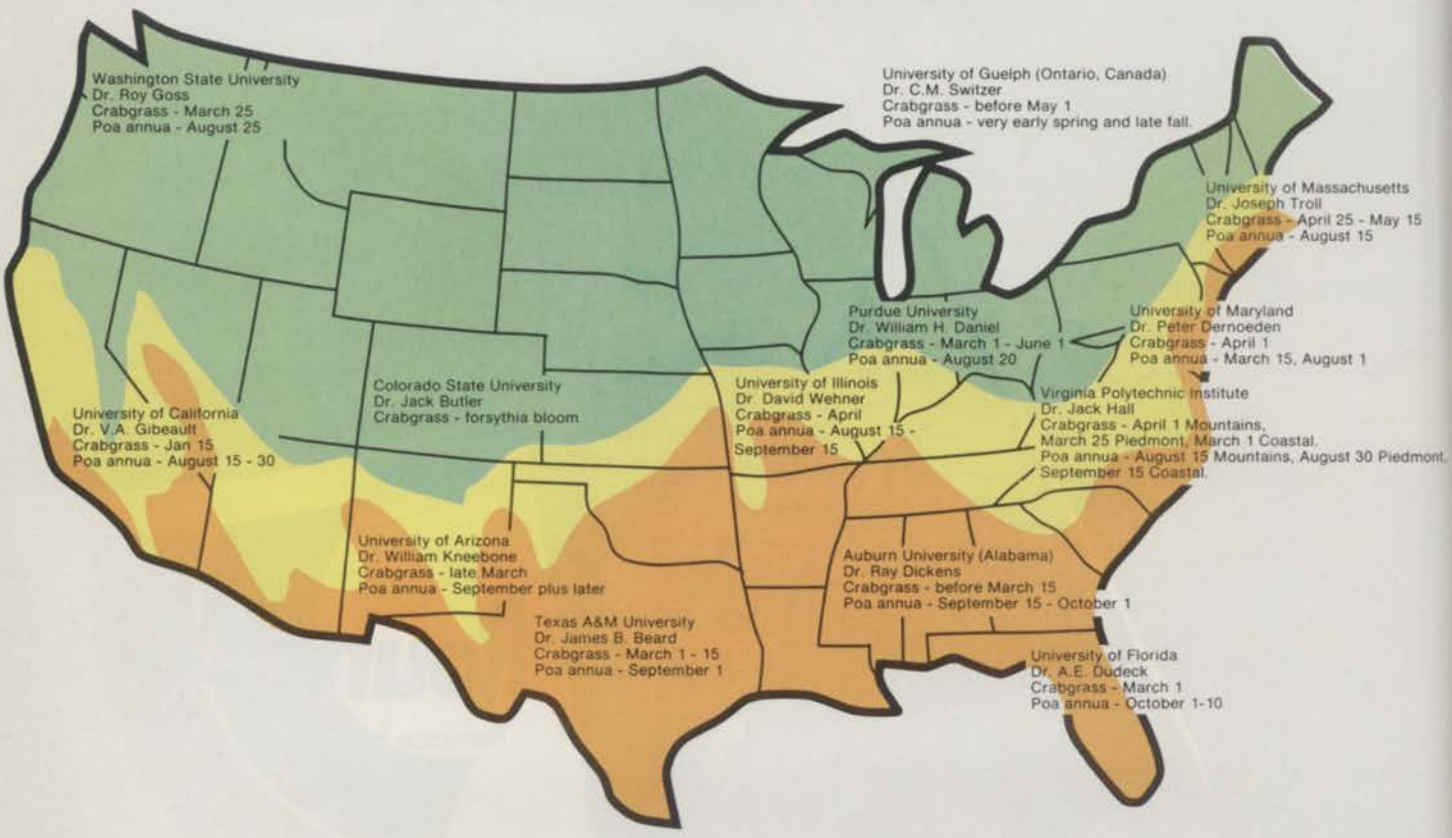
 from page 47

Suggested Timing for Preemergence Herbicides to Control Crabgrass and Annual Bluegrass



during the late growing season, through the dormancy period and into the early growing season.

Beside decreasing the aesthetic value of turf, the primary objective to annual bluegrass is its rapid dieback in late spring. Bermudagrass coverage is usually slow following fade out of annual bluegrass leaving large sections of bare ground exposed. Other weeds, such as goosegrass, tend to move into bare areas.

Annual bluegrass control with preemergence herbicides is usually accomplished with either benefin (Balan), bensulide (Betasan), DCPA (Dacthal), pendamethalin, Pronamide (Kerb), simazine (Princep), or oxadiazon (Ronstar). Two applications may be necessary during the dormant season for acceptable control except with Pronamide or simazine.

Pronamide and simazine provide either preemergence or postemergence control of annual bluegrass in bermudagrass.

There are two choices for annual bluegrass control on bermudagrass greens overseeded with perennial ryegrass. Bensulide may be applied prior to overseeding as a preemergence approach. Ethofumesate (Prograss) may be applied 15 to 30 days after overseeding. Check label for timing to avoid delaying spring transition back to bermudagrass.

Another approach employed particularly on golf courses, is to use a postemergence nonselective herbicide such as paraquat, glyphosate or cacodylic acid prior to the warm-season turf breaking dormancy. This usually does an excellent job on annual bluegrass as well as annual broadleaf weeds present. Injury is often encountered if bermudagrass starts breaking dormancy. The degree of injury is dependent upon the amount of green foliage at the time of application.

Winter Broadleaf Weeds. Important warm-season winter broadleaf weeds include common chickweed, henbit, clovers, spurweed, mouse-ear chickweed, lawn burweed, common dandelion, wild onion, wild garlic, plantains, and speedwells.

Preemergence control of some species can be obtained with benefin, bensulide, DCPA, pendamethalin, simazine, and other herbicides.

Henbit, chickweed, and clovers usually require something other than 2,4-D for postemergence control. In dormant bermudagrass and zoysiagrass, dicamba or combinations with dicamba are used often for postemergence control.

The phenoxys are safe on completely dormant turfs. However, actively growing turfs vary considerably in tolerance to phenoxy materials.

St. Augustine will usually tolerate a .5 lbs./acre of 2,4-D with only minimal injury. At rates above .5 lbs./acre St. Augustine is usually injured. This may be unimportant when using phenoxys on dormant warm-season turfs, but invariably application is made during spring transition. All turfgrasses are more susceptible to phenoxy injury during this transition period. The combination of mecoprop plus chlorfurecol is often used, especially by the homeowner on St. Augustine.

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Cool-Season Turf

by **Robert Shearman**, University of Nebraska, NE

A complete weed control program includes both preemergence and postemergence herbicides, as well as cultural practices.

The primary preemergence herbicides for grassy and broadleaf weeds in cool-season turf are benefin, bensulide, DCPA, pendamethalin, oxadiazon, and siduron.

Siduron is the only preemergence herbicide that can be applied near time of seeding. Bensulide and DCPA can be applied in the spring following a fall seeding.

Benefin and oxadiazon should be applied to established turf. Bensulide can affect rooting of existing bermudagrass and caution is advised for use of most preemergence herbicides on bermudagrass greens. Thinning of fine fescue stands from preemergence herbicides has also been reported.

Preemergence herbicides should be watered in to get the chemical to the seed prior to germination. The resulting chemical barrier in the soil should not be disturbed during key weed germination periods.

The herbicides should be applied two weeks prior to the expected germination period. Second applications may be necessary to provide control for the full germination period. Contact your local turf extension specialist for germination times for primary weeds. Also, see the germination map for crabgrass and annual bluegrass in this guide.

The primary postemergence herbicides for grassy weeds in turf are the arsonates; MSMA, DSMA, CMA, and MAMA. Treated areas should not be reseeded for a month or more after application. See labels for delay periods.

Bentgrass and fescue are more sensitive to arsonates than other cool-season grasses. CMA is the safest for bentgrass.

Weed foliage should be sprayed while still young (two or three leaf stage) if possible. The effectiveness of arsonates improves with temperature and rates need to be increased for temperatures below 80 degrees F.

The primary postemergence herbicides for broadleaf weeds are 2,4-D, 2,4-DP, dicamba (Banvel), and MCPP. Formulations of these products, such as Trimec and Weedone DPC, provide increased effectiveness on hard-to-control species. Turflon-D (triclopyr plus 2,4-D) is effective on some of the more difficult to control broadleaf weeds, such as knotweed and yellow wood sorrel.

These herbicides should not be applied until a new lawn has been mowed at least three times. The target weeds should be actively growing for best results. The temperature at applications should be at least 60 degrees F. Applications during extreme heat or drought can cause severe damage to desirable turf.

Two treatments of postemergence herbicides are generally necessary to control broadleaf weeds. See labels for the proper interval between applications.

Winter annuals can be sprayed early in the year, followed by summer annuals and perennials. Fall treatment for perennials is possible.

Postemergence herbicides are often combined to achieve improved control and reduce application time.

Occasionally, a landscape manager or sod producer chooses to fumigate a seedbed prior to planting to reduce weed seed, control insects and disease, and eliminate offtype grasses. Methyl bromide (Dowfume), metham (Vapam), dazomet (Mylone), and Vorlex are used for preplant fumigation. See labels for delay period following treatment and before seeding.

Progress is being made in selectively killing annual bluegrass in perennial ryegrass, Kentucky bluegrass, and bentgrass fairways.

Renovation of turf stands is gaining acceptance, especially since the development of glyphosate (Roundup). During renovation all existing vegetation is killed and the area is reseeded in a matter of weeks without major cultivation. Glyphosate is deactivated within a few days following application, but a delay of two weeks is recommended. Amitrole, cacodylic acid, and dalapon can also be used, but the delay period is longer.

Progress is being made in selectively killing annual bluegrass in perennial ryegrass, bentgrass, or Kentucky bluegrass fairways.

continued on page 56

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Circle No. 112 on Reader Inquiry Card

Ornamental Weed Control

by **Elton Smith**, Ph.D., Ohio State University, Columbus, OH.

Rising labor costs and increased use of ornamentals in commercial and residential landscapes are causing an increase in use of both preemergence and postemergence herbicides in landscape maintenance.

The landscape manager has to control weeds around a variety of desirable plant material, including deciduous and evergreen shrubs, trees, groundcovers, annual and perennial flowers, bulbs, and ornamental grasses. These plants are located in a wide variety of locations, such as plant beds, containers, greenhouses, atria, and even in sand traps.

Attention to the label is especially important in ornamental weed control due to the varying sensitivity of plants to herbicides. Manufacturers attempt to provide products safe to the largest possible number of species.

Before planting

The most successful approach to a weed-free landscape is to control perennial grasses and broadleaf weeds prior to planting.

Spraying the weeds in the planting area with postemergence systemic herbicides will kill the root system as well as the topgrowth. Such herbicides include 2,4-D and related products for broadleaf weed control, dalapon for grass control, and amitrole for general weed control. These may have to be applied more than once for complete kill. Each has a specific waiting period prior to planting. Glyphosate is very effective and has no soil residue.

Fumigation of plant beds is another alternative. Vapam is one of the simplest fumigants to use. It is applied and watered into the soil. The water seals the surface, but plastic can also be used to cover the bed after the fumigant is applied and watered in. The fumigant will also kill insects and some fungi detrimental to plants. Planting can take place within days following treatment.

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Circle No. 181 on Reader Inquiry Card

Broadleaf Weeds

Even though selective controls exist to remove broadleaf weeds from grass they exhibit amazing tenacity often requiring multiple treatments.

Buckhorn

Mouse-eared Chickweed

Common Chickweed

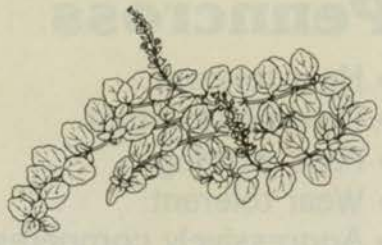
Dandelion

Ground Ivy

Heal-all

Henbit

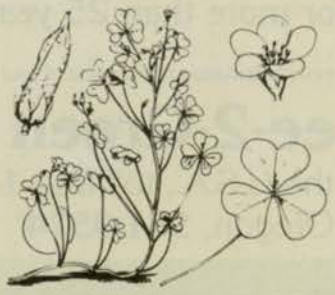
Plantain



Speedwell

Spurge

White Clover



Yellow Wood Sorrel

continued on page 62

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That's how this machine has been designed! The mammoth 104'' appetite affords you 31% higher capacity than a standard 72'' unit. With a 60'' mower out front and two hydraulically operated wings, we have eliminated the application of long, troublesome belts and assured you of picture perfect floatation over berms and undulations.

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F CLASSIC

The biggest tournament of the year is only days away. Who needs spurge?

Pesky, hard-to-control weeds like spurge, oxalis or chickweed can be especially embarrassing at a time like this.

Happily, WEEDONE® brand DPC broadleaf herbicide controls those and more than 65 other tough turf weeds. With control that's quick, effective, dependable.

Designed for turf

WEEDONE® brand DPC is a powerful combination of both 2,4-D and dichlorprop in one convenient turf herbicide with the weed-killing performance of more expensive, three-way mixes.

And WEEDONE® brand DPC herbicide won't harm most grass species.

So for golf courses, lawns, parks, athletic fields and other valuable turf areas, WEEDONE® brand DPC could be the only broadleaf herbicide you need.

That simplifies your inventory and handling. Not to mention budgeting.

WEEDONE® brand DPC is approved for season-long use. So you can spray any time from early spring through late fall. Whenever weeds are actively growing.

WEEDONE® brand DPC herbicide mixes easily with most liquid fertilizers for economical one-trip spraying. Another big plus for turf professionals.

The first name in herbicides

At Union Carbide, we were the first to develop the phenoxy herbicide chemistry turf pros have depended on for nearly 40 years. And, with formulations like WEEDONE® brand DPC we're still working to help make turf weeds the least of your worries.

This year, ask your turf chemical supplier for WEEDONE® brand DPC broadleaf herbicide. And enjoy the tournament.

From the turf care group at Union Carbide

Union Carbide Agricultural Products Company, Inc. Box 12014 T.W. Alexander Drive, Research Triangle Park, N.C. 27709.

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Circle No. 186 on Reader Inquiry Card

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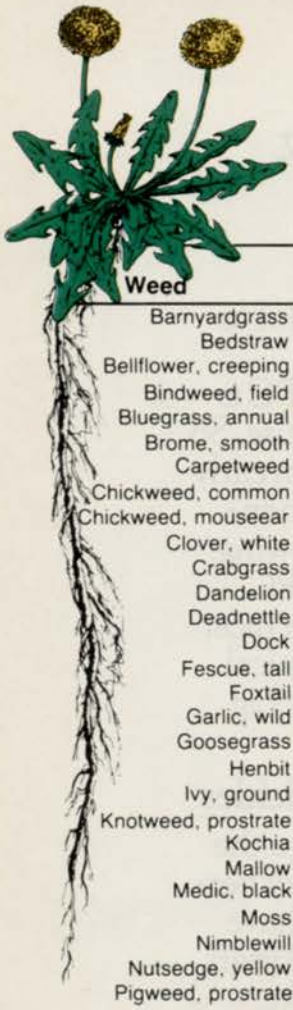
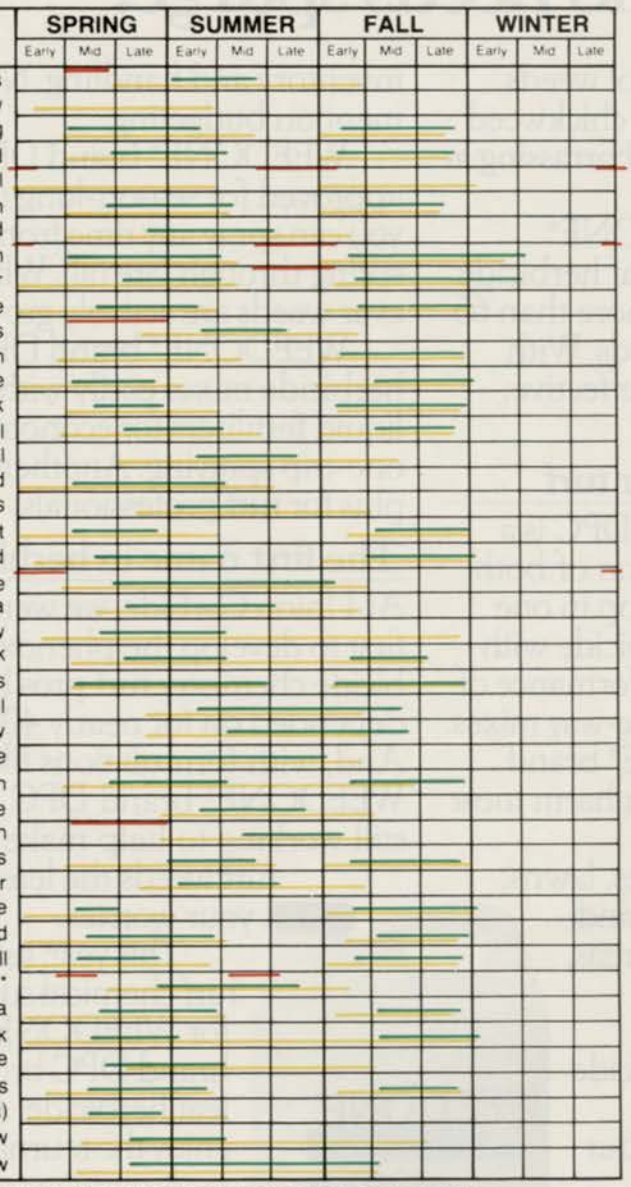


CHART 1
Growth and treatment periods



Active period of plant growth. Varies from year to year and from north to south.
Apply preemergence chemicals.
Apply postemergence treatments. Approximate periods may vary two weeks from season to season.

* Preemergence herbicide applications should be made a second time in late June or early July.

Fumigants and nonselective herbicides will kill desirable plant material contacted by them. Care must be taken to protect nearby trees and shrubs which cannot be moved.

A number of preemergence herbicides are labelled for ornamentals and two are recommended for use prior to planting. Eptam or Treflan can be incorporated into the soil, following tillage, to control annual and some perennial weeds for a period of four to six weeks. Following incorporation to a depth specified on the label, ornamentals can be planted. This method has been used extensively by commercial nurserymen and is now being used by landscape contractors to a large extent, especially where maintenance for a specified period of time is in a planting contract.

Tillage as a method of weed control prior to planting is a successful practice for the control of annual weeds but not perennial weeds. In some cases, tillage only cuts up the root systems of perennials into smaller pieces and distributes them.

Landscape fabrics are growing in use for low maintenance areas. The black plastic cover has been improved to a knitted fabric which allows water and nutrients through but blocks light and growing weeds. These are useful in mulched beds where plants are spaced out. They are impractical for groundcover areas and they do not control germination of weed seeds in the mulch above the fabric.

The most successful approach to a weed-free landscape is to control perennial grasses and broadleaf weeds prior to planting.

After planting

In recent years, the landscape industry has made extensive use of mulches to prevent weeds in the landscape. Mulches should be applied two-inches deep and renewed to that depth annually. Mulch layers deeper than two inches accomplish little and actually harm shallow-rooted ornamentals which will root into the mulch instead of into the soil.

The most popular mulches are Cypress and pinebark mulches, as well as wood chips, peat moss, and various hulls. Materials which are not composted or inorganic, can rob the soil below of important nitrogen. Composting or sterilization also kills any weed seeds in the mulch.

Preemergence materials can be used in combination with mulches to stop germination of weed seeds in the mulch or those deposited by birds and wind. They control annual weeds for a period of four to eight weeks. Reapplication is usually necessary for season-long control.

Determine the amount of preemergence herbicide to be applied by figuring the area of the plant bed, measuring the proper amount for that area, and distributing it evenly in the area.

Circle No. 174 on Reader Inquiry Card

Right-of-Way Weed Control

by **R. W. Bovey**, USDA-ARS, College Station, TX

Many areas around buildings, ditchs, billboards, poles, factories, shops, golf courses, parking areas, parks, industrial plant sites, vacant lots, schools, airports, roadsides, fences, lawns, pipelines, and other public or non-cropland areas may harbor unwanted trees and brush.

If these undesirable woody plants resprout after top removal, they may be difficult to kill and remove and cause unsightly appearance or interfere with the intended use of the property. The landscape manager has many options at his disposal to control and remove undesirable woody vegetation and replace it with desirable cover.

Woody plants can be removed by two primary methods or combinations of these methods which include mechanical or chemical means. The selection of the method depends upon

1 size of the area to be cleared;
2 size of the brush;
3 difficulty of control and kind of brush;
4 proximity to valuable vegetation, water sources, and population centers; and
5 use to be made of the area following brush removal.

Control methods

It is essential that problem plants be accurately identified so the proper control methods can be used. If the species cannot be identified, consult the local county agent, extension specialists, or personnel from the State Agricultural Experiment Station or U.S. Department of Agriculture. Some well illustrated circulars, bulletins, and books are also available.

Mechanical Control. Hand methods of brush control, although effective, are slow, costly, and laborious. They are practical on small areas or in scattered stands.

Hand methods include grubbing, cutting, girdling, and burning.

Grubbing consists of using a grubbing hoe, shovel, or similar tool to dig enough of the root system out of the soil to kill the plants. The operation is difficult and time consuming, but effective if properly done.

Cutting down brush with axes or saws is most effective on woody species that are killed when the top growth is removed, such as eastern redcedar and blueberry juniper. Species that resprout can be treated with herbicides to prevent resprouting.

Girdling is cutting a ring through the bark and cambium layer to prevent movement of water and nutrients to top growth. Girdling is practical in scattered stands of large trees 6-inches in diameter or greater. It is most effective during the summer months. Herbicides can be applied to the cut ring for improved kill.

Portable chain or power saws and girdlers are available for brush control. They reduce labor, time, and cost in brush removal but have limited use in dense stands or large areas.

Dozing is one of the more widely used methods of brush control. Much clearing is done with straight dozer blades; however, many modifications and attachments are available for specialized clearing jobs.

Ideally, dozing removes brush and large trees by pushing or pulling the plants out with as much of the roots intact as possible. Special attachments to the straight blade include teeth or U-shaped "stingers" to allow cutting the plant off below the ground line and lifting out the roots.

Dozing is most commonly practiced in open stands of large trees and brush or on rocky soils where other mechanical control methods are limited. It is not desirable in dense stands of brush that sprout from the roots after top removal.

Dozed trees can be windrowed or stacked so the brush can be burned or left to decay. The equipment and fuel required for dozing are costly. Dozing heavily damages the turf and grounds.

Mowing and shredding are temporary control methods for weeds and small brush in landscape manage-

continued on page 68

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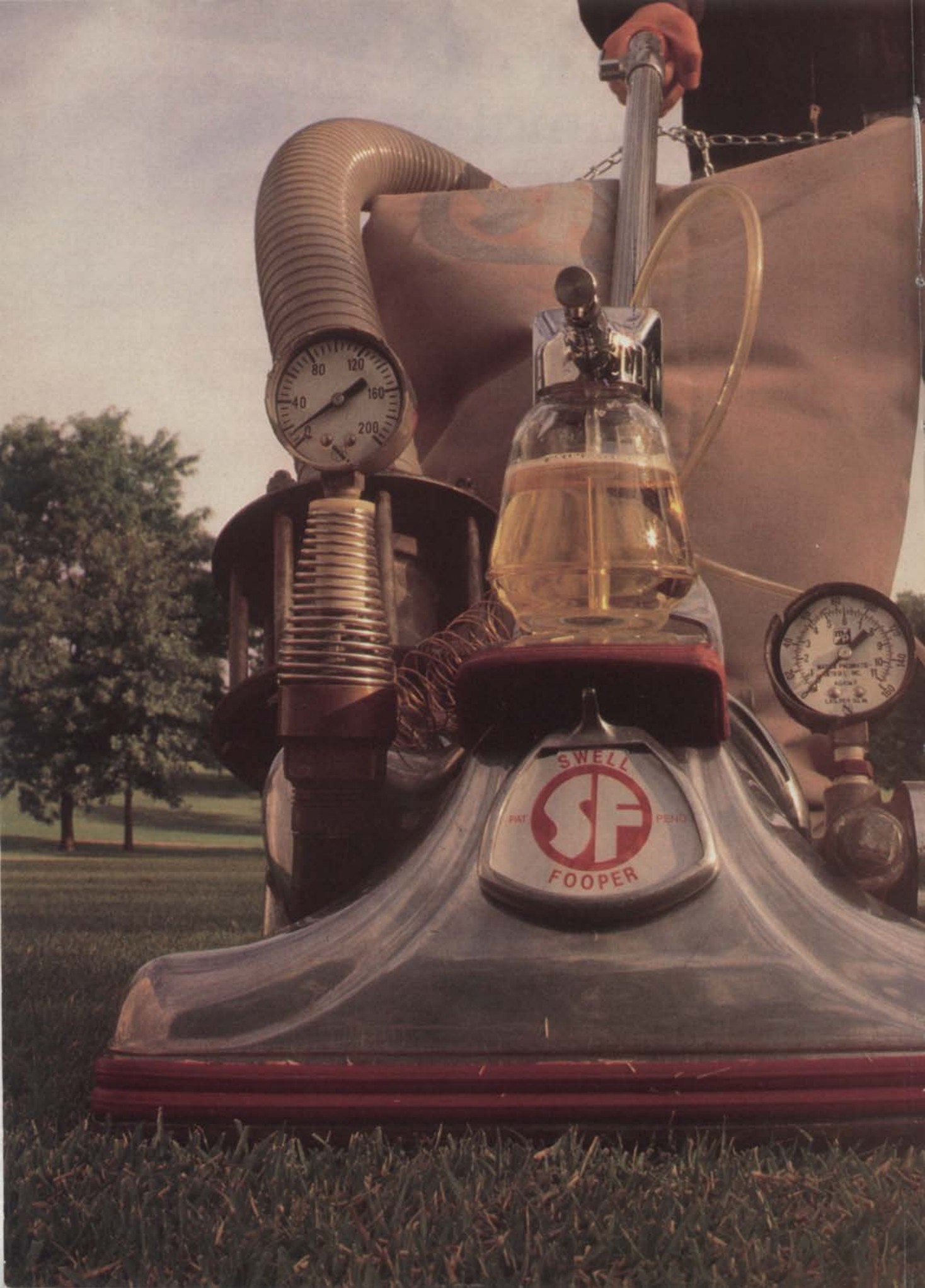
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HOW TO TAKE OUT SURFACE FEEDERS AND GRUBS IN ONE SWELL FOOP.

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The same product, OFTANOL 2, does a bang up job on grubs. Mix it at the recommended rate and spray it on. Use OFTANOL anytime, as a preventive in the spring or as a curative, whenever grubs are a problem.

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ment. Repeated mowing, once or twice a year, is needed for maintenance on most weed-infested areas.

Mower types vary, but most consist of sharp rotary blades. Heavy duty shredders can be used on large brush and small trees, three- to four-inches in diameter.

Disking. Large disk plows or tandem disks will destroy stands of small brush. They may also destroy the grass stand. Disking is limited to tillable soils. Disking prepares a good seedbed, although compaction by a cultipacker, roller, or other implement may be desired. The operation is expensive.

Cost of mechanical treatments is usually closely correlated with degree of soil disturbance and size and density of brush to be removed. Dozing, disking, and grubbing are among the most effective mechanical brush control treatments, but are the most costly to perform, while mowing is less expensive. Hand methods, such as sawing, axing or grubbing, are sometimes effective, but are slow, costly, and laborious.

Chemical Control. Herbicides are an important means of weed and brush control. Compared to mechanical practices, herbicides are usually less expensive, less damaging to the environment, and often more effective.

Herbicide sprays, however, are subject to drift and may damage susceptible crops or valuable vegetation on nearby areas if improperly applied.

A variety of herbicides and herbicide combinations are commercially available. It is necessary to understand the properties and effects of herbicides in order to safely and effectively use them.

Individual herbicides and combinations of herbicides are used for weed and woody plant control. After manufacturing, technical (pure) herbicide must be formulated with other ingredients to prepare usable products for ease of handling and to obtain the desired effects.

Since very small amounts are sometimes required per unit of land, uniform application is esential. Herbicides are formulated as liquid concentrates, wettable powders, and granules or pellets. It is important to know the characteristics and precautions to be taken when using herbicides.

Characteristics of Herbicides

Phenoxy herbicides, such as 2,4-D, 2,4-DB, dichlorprop, and MCPA have been used for over 30 years and are effective for the control of many weed and brush species. They are used to produce changes and shifts in plant cover for crops, pastures, lawns, or wildlife habitat.

The phenoxys are not toxic to livestock or man at dosages labelled for weed control and disappear rapidly from the soil, vegetation, and water. They do not accumulate in the food chain.

Susceptible vegetation, especially broadleaf plants, may be damaged from spray drift or from volatilization. Following label instructions and making applications during favorable weather should prevent drift and volatilization problems.

The phenoxy herbicides selectively control broadleaf weeds in grasslands or grass crops. Rates of O.25 to 2 pounds per acre effectively control many broadleaf plants.

The phenoxy compounds are relatively inexpensive and easy to apply. They are usually marketed as liquid concentrates as salts or esters.

The ester formulations are often more effective as foliar sprays on trees and brush than the salts. Amine formulations commonly available include dimethylamine, triethymine, diethanolamine, trimethylamines, triethanolamine, and others.

Other inorganic salts of the phenoxys that have been sold include the ammonium, sodium, potassium, and lithium salts. Salts are sprayed in water carriers.

Esters are classified as high volatile or low volatile, depending upon how readily they vaporize. Low volatile esters should be used in areas where sensitive crops or vegetation are grown.

The concentration of the active ingredient, the "acid equivalent," is indicated on the label as pound-per-gallon. If a herbicide concentrate has an acid equivalent of 4 pounds per gallon, then 1 gallon of the concentrate contains 4 pounds by weight of the parent acid, regardless of formulation. Usually the most concentrated formulations cost less per pound and are more economical to use than weaker concentrates.

The phenoxy compounds are readily absorbed by leaves and are translocated throughout the plant along with the products of photosynthesis. Oil soluble formulations, usually esters, appied in kerosene or diesel oil will penetrate the bark of most woody plants, and can be used as basal sprays or foliar sprays to individual plants.

Phenoxy herbicides, however, are more commonly applied broadcast to large areas containing dense stands of brush. These herbicides are sprayed on above-ground parts and foliage since they are not effective at economical rates as soil-applied herbicides.

Organic arsenicals. The organic arsenicals include DSMA, MSMA, and cacodylic acid and are available as liquid concentrates. These compounds

continued on page 72

Calculating Rates and Quantities

Granular Materials

Example—A landscaper needs to treat 4,000 sq. ft. of Juniper with 4% RONSTAR granules at 4 lbs. aia. How much RONSTAR is required?

Formula

$$\text{lbs. aia} \times \frac{\text{sq. ft. to be treated}}{\text{44,000 sq. ft./acre}} \times \frac{1000}{\text{\% granular}} = \text{lbs. required to treat area}$$

Calculation

$$4 \text{ lbs. aia} \times \frac{4{,}000}{44{,}000} \times \frac{100}{4} = 9.1 \text{ lbs. 4\% granular RONSTAR}$$

Wettable Powders

Example—A landscape firm needs to treat 4,000 sq. ft. with 50% DEVRINOL wettable powder at the rate of 10 lbs. aia.

Formula

$$\text{lbs. aia} \times \frac{\text{sq. ft. to be treated}}{\text{44,000 sq. ft./acre}} \times \frac{100}{\text{\% powder}} = \text{lbs. required to treat area}$$

Calculation

$$10 \text{ lbs. aia} \times \frac{4{,}000}{44{,}000} \times \frac{100}{50} = \text{1.8 lbs. 50\% DEVRINOL W.P. to be mixed in enough water to cover 4,000 sq. ft.}$$

Liquid Concentrate

Formula

$$\text{lbs. aia} \times \frac{\text{sq. ft. to be treated}}{44{,}000} \times \frac{1}{\text{lbs. active ingredient/gallon}} = \text{gallons required to treat area}$$

Calculation

$$2 \text{ lbs. aia} \times \frac{22{,}000}{44{,}000} \times \frac{1}{4} = \text{.25 or 1/4 gal. TREFLAN to be mixed in enough water to cover 1/2 acre}$$

New Du Pont Landscape Fabric. It lets water through to give you healthier beds with less work.

New DuPont Landscape Fabric lets water pass through, reduces wash-away of mulch while it impedes weed growth. So you get healthier, more attractive plant beds with less maintenance work and cost.

Everything you apply for bed care gets to plant roots in the amount you want, where you want it. Water, fertilizers, herbicides and pesticides seep down through this chemically inert fabric to nourish and protect every plant in your bed.

DuPont Landscape fabric is easy to put down with scissors or knife. It comes in four roll sizes from 3- to 12-feet wide.

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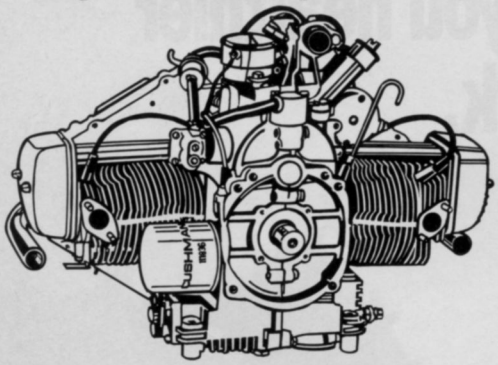
WHAT MAKES THE CUSHMAN GRASS GROOMING SYSTEM WORTH THE INVESTMENT:

Twenty-two percent more horsepower. Improved performance. Increased work value. Nothing cuts, catches and dumps as fast or as economically.

The problem with most mowers is that no matter how fast they cut, your work slows to a turtle's pace when it comes to cleaning up the clippings.

That's why we created the Cushman Grass Grooming System. With it, you can cut, catch, dump and resume cutting without interruption.



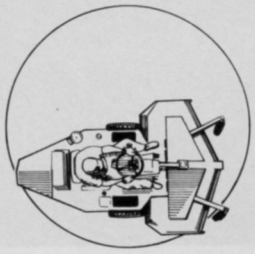
A NEW 22-HP ENGINE.

At the heart of our Grass Grooming System is the Cushman Front Line™ mower.

And at the heart of the Front Line is a remarkable new 22-hp gas engine.

It gives you the power to maintain blade speed through tall grass, dense weeds and other conditions that might stop other mowers.

It's built the way you want an engine built—tough. The crankshaft is forged alloy steel. The cylinder heads are reinforced for extra strength under stress. And all the details—from the Teflon-coated O-rings and swaged-in-place valve guides to our exclusive Clean-Air Induction System—were designed with one goal in mind.



Dual traction assist pedals provide a tight, zero turning radius.

Years of dependable performance.

FIRST CLASS MOWING.

Here's where it all pays off: the quality of a Front Line mowing job.

The three cutting blades are positioned to overlap each others' swath slightly. So no grass is left uncut. The driver can maneuver around bushes, trees and sidewalks with incredible precision, thanks to the Front Line's Dual Traction Assist pedals—separate braking for each of the two front wheels that gives you a tight, zero turning radius.

THE FINISHING TOUCH.

Mounted to the Front Line's right side is the Cushman Grass Caddy™—a durable, non-stick polyolefin hopper that collects up to 16 bushels of clippings and debris.

When it's filled, just back the Front Line up to a truck or container, engage the hydraulic control and the Grass Caddy hopper lifts 4½-feet above the ground and dumps.

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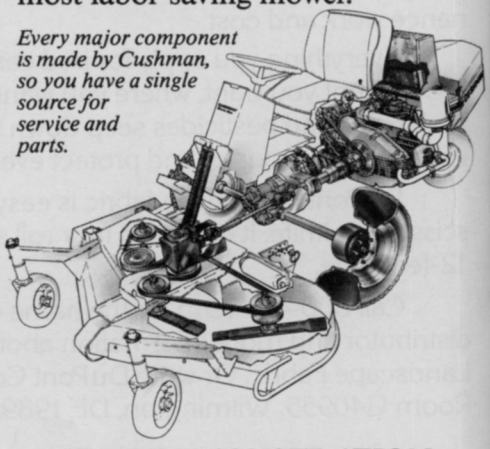

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have limited use for woody plant control as foliar sprays.

DSMA and MSMA are used for postemergence weed control in tolerant lawn grasses and noncrop areas. Cacodylic acid is used as a general desiccant and defoliant (contact) spray on many crop and non-crop areas.

The organic arsenicals can be used for quick dieback of woody species, but plants tend to recover. They can be injected into the trunk to kill unwanted trees. As foliar sprays, they are applied in water. Complete coverage by spray is required for best results. They are inactivated by soil contact.

Organic arsenicals may injure desirable plants. By directed spraying, desirable plants can be avoided. Organic arsenicals have a moderate to low mammalian toxicity but are highly toxic to insects such as honey bees. They are mildly corrosive to spray equipment.

Bipyridyliums. Diquat and paraquat are desiccant (drying agents) and defoliant herbicides used for general contact activity against weeds and brush. In some situations, they are used as selective herbicides.

Paraquat is water soluble and is inactived by soil contact. Woody species will usually resprout from foliar sprays of diquat and paraquat. Paraquat may be more effective as an injection treatment against some undesirable trees.

Paraquat is highly toxic when ingested. Extreme care must be taken to avoid breathing the spray mist or getting the concentrate on the skin. Use of protective clothing and respirators are recommended when making applications.

Get immediate medical care in the event of ingestion. If treated within 12 hours, chances of survival are excellent.

Benzoics. Dicamba is a selective translocated herbicide. It controls many broadleaf weeds in pasture crops and turf and some woody plants.

Dicamba is similar to the phenoxy herbicides in activity and use. It is absorbed through roots, as well as foliage. It may be applied by either ground or aerial sprays or as granules, depending upon the weeds to be controlled and their proximity to susceptible crops.

Dicamba may be applied in mixtures with 2,4-D to broaden the spectrum of weed species controlled. It has a low order of toxicity to wildlife, fish, livestock, and humans. It rapidly degrades and does not accumulate in the environment. Dicamba has a low corrosion hazard to spray equipment.

It is formulated as a liquid as the dimethylamine or sodium salt and is sprayed in water carrier. It is also formulated in granular form as the acid.

Dicamba is highly water soluble. Care must be taken to prevent its movement into water sources. Spray drift of dicamba to sensitive crops, conifers, and certain woody plants should be prevented. Granular formulation may be preferred where drift of sprays would present a hazard to crops.

Dichlobenil is also a benzoic. It is a selective herbicide for control of annual and perennial grasses and weeds in non-crop areas. Dichlobenil inhibits weed seed germination and plant cell division at the growing points.

Because of its relatively high volatility, application when the temperature exceeds 70 F. must be followed by a quarter-inch irrigation or rainfall soon after. Downward movement of active ingredient does not exceed two inches, so deeper-rooted woody ornamentals will not be effected. The control is achieved from a chemical barrier in the top one to two inches of soil.

Ureas and uracils. These compounds include bromacil, diuron, fenuron, fenuron-TCA, monuron, monuron-TCA, tebuthiuron, and hexazinone.

Ureas and uracil-type herbicides can be selective at low rates and nonselective at high rates. They are usually formulated as wettable powders for water sprays or as granules or pellets for dry application.

Bromacil (a uracil) will control a wide variety of woody species. If rates above 5 pounds per acre are used, it will also kill many desirable grasses and forbs on grazing lands.

Fenuron is no longer produced commercially, but a fenuron-TCA combination is available and is used to control certain woody plants and weeds on non-crop areas. Monuron and monuron-TCA combinations are commercially available, but have limited use for brush control since high rates are required for effectiveness. The monuron-TCA or fenuron-TCA combinations are generally used for non-selective, temporary sterilization in non-crop areas.

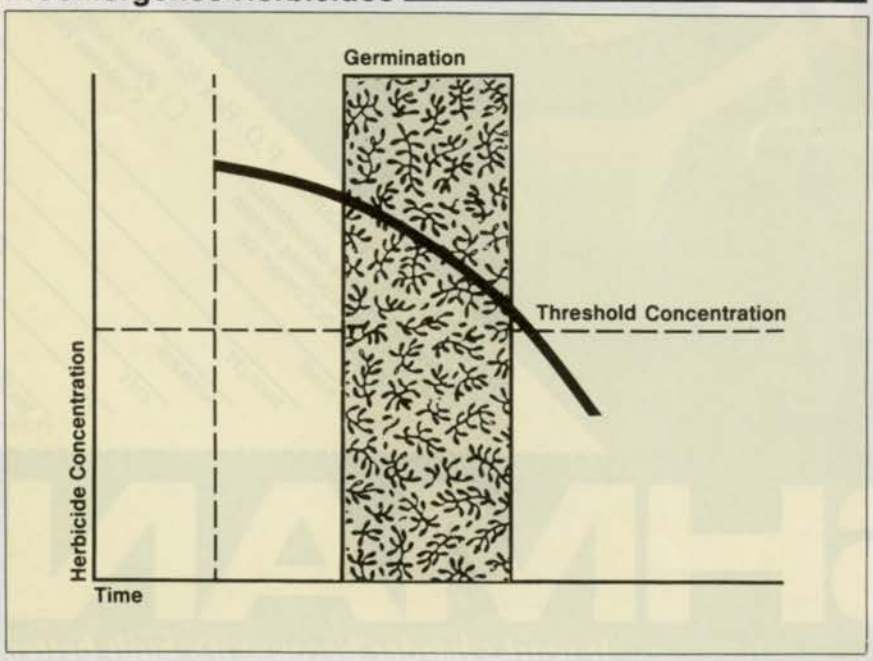
Tebuthiuron provides excellent control of a variety of undesirable woody plants. This herbicide is formulated as pellets and contains 20 or 40 percent active ingredient. A new "brush bullet" containing 13.8% active ingredient is also available. Tebuthiuron is commercially available for grazing lands and weed control on non-crop areas.

Hexazinone is a relatively new compound showing promise for woody plant control and use on non-crop areas. Hexazinone is recommended for forestry site preparation and pine release where loblolly, long leaf and short leaf, slash, and Virginia pines are grown.

The pelletized product can be spread in a grid pattern for hardwood brush control. It also shows promise for total vegetation control including perennial grasses. It is highly water soluble.

The ureas and uracils mentioned

The Effect of Delaying the Application of Preemergence Herbicides



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Herbicide Directory

Herbicide	Brand Name(s)	Company	Uses
amitrole	Amitrole-T	Union Carbide	Non-selective grass and broadleaf control in non-crop areas including ditches, roadsides, industrial areas and marshes.
arsenal	Arsenal	American Cyanamid	Non-selective grass and broad leaf control in non-crop areas.
ammonium sulphanate	Ammate	DuPont	Non-selective rights of way herbicide
asulam	Asulox	Rhone Poulenc	Postemergence grassy weed control for turf and ornamentals
atrazine	atrazine	Ciba Geigy	Non-selective control in non-crop areas.
benefin	Balan	Elanco	Preemergence control of annual grasses and broadleaf weeds in established turf.
bensulide	Betasan Pre-San Lescosan Betamec-4	Stauffer Mallinckrodt Lesco PBI Gordon	Preemergence control of annual grasses and broadleaf weeds in established turf and established flower gardens. Safe near tulip and daffodil bulbs.
bentazon	Basagran	BASF	Selective postemergence control of nutsedge in warm-season turf.
bromacil	Hyvar	duPont	Nonselective control of weeds and grasses in non-crop areas. usually mixed with diuron for roadsides and rights-of-way.
bromoxynil	Brominal Buctril	Union Carbide Rhone Poulenc	Postemergence control of broadleaf weeds in seedling turf, established turf and non-crop areas.
cacodylic acid	Phytar Rad-E-Cate	Vertac Vineland	Nonselective control for turf renovation, edging and in plant beds.
chloramben	Amiben	Union Carbide	Preemergence control in ornamentals.
chlorfurecol	Maintain	Uniroyal	Growth regulator. Also controls broadleaf weeds and vines.
copper	Cutrine-Plus	Applied Biochemists	Control algae, chara and hydrilla in potable water.
dalapon	Dalapon 85 Dowpon M	SDS Biotech Dow	Selective control of perennial and annual grasses in non-crop areas and ditchbanks.
dazomet	Mylone	Hopkins Ag.	Preplant sterilant for turf and ornamental beds.

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are absorbed primarily through the roots of plants. They may be applied in spring or fall when weeds and brush are actively growing and when adequate rainfall leaches them into the soil.

Fall, winter, and early spring applications of tebuthiuron and hexazinone can be timed to reduce injury to forage plants and eliminate hazards of drift. These compounds may kill trees at a considerable distance from the point of application, depending upon the size of the root system and whether it extends into the treated areas. Therefore, extreme care should be taken near desirable trees.

Ureas and uracils are non-volatile and do not corrode equipment. Most of the urea and uracil herbicides can be injurious to some forage and turf species when applied broadcast, especially as sprays. Applying herbicides as pellets or balls to confine the herbicide to a few spots in the treated area reduces exposure to desirable forage or turf plants. Also, application of granules, pellets, or sprays to the soil surface or sprays applied subsurface in rows or bands spaced 6 to 10 feet apart may reduce injury to forage or turf and may increase kill of some woody plants.

Most of the ureas and uracils persist in the soil for several months at rates used for brush control. They are low in toxicity to warm-blooded animals.

Other Organic Herbicides

Arsenal (AC 252,925) is a new broad spectrum herbicide with activity against herbaceous and woody plants. It will control sedges, grasses and broadleafed weeds applied either preemergence or postemergence.

Arsenal is readily absorbed through foliage and roots. Complete kill may take several weeks.

Most herbaceous weeds are susceptible to Arsenal at rates of 0.4 to 1 pound per acre whereas woody species may require higher rates of 0.75 to 3 pounds per acre depending upon species to be controlled.

Arsenal is being tried experimentally for conifer release and weed control in bermudagrass. Arsenal should be applied postemergence to perennial weeds when they are actively growing and the herbicide is readily translocated.

It has a low order of toxicity to warm-blooded animals. It persists for 3 to 12 months in the soil depending upon rate applied and soil moisture content.

Picloram is a selective, translocated herbicide that effectively controls many weed and brush species in

continued on page 78

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L245 HC	21	3	Standard
L2250	21	3	Mechanical shuttle-shift (8x7)
L2550	23.5	3	Mechanical shuttle-shift (8x7)
L2850	27	4	Mechanical shuttle-shift (8x7)
L345	29	4	Standard
L355 SS	29	4	Hydraulic shuttle-shift
L3750	36	5	8x8 or Hydraulic shuttle-shift
L4150	40	5	

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4 THINGS Y SUCCE DISEASE CONT

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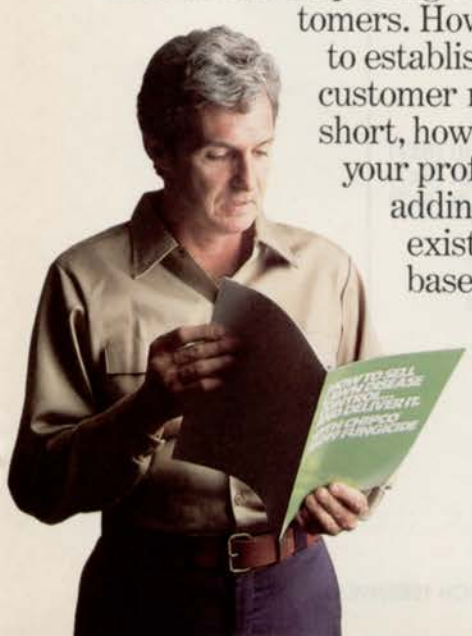
Every year, more lawncare companies discover new profits in turf disease control. If yours isn't one of them, we'd like to show you the way by sending you our free CHIPCO® 26019 fungicide *Healthy Business Package.*

It includes lots of valuable information and materials to help you turn lawn diseases into profits... beginning with strategy.

We'll explain how effective disease control can give you a competitive edge. How it can build your reputation as a quality-oriented company. How it can protect the business you already have...and help bring in more customers. How it can be used to establish a long-term customer relationship. In short, how it can improve your profitability by adding value to your existing customer base.



2 THE RIGHT TACTICS.

Coming up with an effective disease control sales strategy is one thing. Carrying it out is something else. Our *Healthy Business Package* shows you how.

It includes not only advice on how to communicate with customers and prospects, but materials you can use. Materials for newspaper, direct mail and bill stuffers. Doorknob hangers. In-home sales presentations.

One reason lawn disease treatment is an excellent business opportunity is that many homeowners don't even know that turf diseases exist. If you make them aware of the problem—and offer the solution—in your advertising, promotions and sales calls, you'll capture more than your share of this growing market. We can help.

OU NEED TO
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3 THE RIGHT TRAINING.

Before you start offering disease control to your customers, you have to be sure your employees know how to handle the job.

We'll take care of that, too. In your *Healthy Business Package*, you'll find training aids you can use to teach your workers how to spot, identify and treat all the major turf diseases they're likely to encounter.

With the materials we provide, you can quickly and easily show your people how to apply a turf fungicide properly and keep your customers satisfied.

4 THE RIGHT FUNGICIDE.

Of all the turf fungicides on the market today, CHIPCO 26019 fungicide is the best for building your business.

It controls the major turf diseases, including Leaf Spot, Red Thread Dollar Spot, Fusarium Blight and Brown Patch. So it's the only fungicide you need.

Its long-lasting residual action makes it cost-effective and lets you fit it into your existing treatment schedule... with virtually no call-backs.

It's easy to use. And toxicity is low, so you and your customers get added peace of mind.

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Please read label carefully and use only as directed.

Circle No. 172 on Reader Inquiry Card

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Herbicide Directory *continued*

Herbicide	Brand Name(s)	Company	Uses
DCPA	Dacthal	SDS Biotech	Preemergence control of annual grasses and broadleaf weeds in turf and ornamental beds.
dicamba	Banvel	Velsicol	Selective postemergence control of broadleaf weeds in turf and for noncrop control of brush.
dichlobenil	Dyclomec	PBI Gordon	Selective weed control in ornamental beds and for total weed control on roadsides, fencerows, etc.
dichloprop	2,4-DP	SDS Biotech	Brush control and aquatic weed control.
diphenamid	Enide	TUCO, Upjohn	Selective control of annual grasses and broadleaf weeds in bermudagrass, dichondra and around ornamentals.
DSMA	Methar 30 Ansar DSMA Liquid DSMA 81% Weed-E-Rad	W.A. Cleary SDS Biotech Drexel Vertac Vineland	Selective postemergence control of sedges and grasses in turf and ditchbanks and storage yard.
diuron	Karmex Dynex Diuron 80WP Urox	du Pont Vertac Drexel Hopkins	Generally used at high rates for nonselective total weed control in industrial sites.
diquat	Diquat	Ortho, Chevron	Aquatic weed control.
endothall	Aquathol K Endothall	Pennwalt Pennwalt	Aquatic weed control and turf herbicide and dessicant.
EPTC	Eptam	Stauffer	Selective control of annual grassy weeds, nutgrass, and perennial weeds.
Ethofumesate	Prograss	Nor-Am	For control of Poa annua and white clover in fairways.
fenac	Fenac	Union Carbide	Preemergence long-term control of weeds, usually mixed with other herbicides.
fosamine	Krenite	du Pont	Brush control.
fluazifop-butyl	Fusilade	ICI Americas	Selective postemergence control of grassy weeds in ornamentals.
floridone	Sonar	Elanco	Broad spectrum herbicide for submersed and emersed aquatic weeds.
Glyphosate	Rodeo	Monsanto	For control of emerged aquatic weeds and broad leaf weeds in or near aquatic sites, such as ditchbanks.
glyphosate	Roundup	Monsanto	Nonselective, short-term hervicide for turf renovation and total ween control along fences and plant beds.

grasslands. It can be applied to the soil or foliage and is effective as injection/cut-surface treatments on many undesirable trees.

Picloram can be applied in liquid sprays and as pellets to brush in the spring and fall, depending upon the species to be controlled. It is absorbed by both foliage and roots. Most perennial grasses are resistant. Its high activity against many woody plants at moderate rates makes it desirable for brush control. Care must be taken to prevent drift of picloram to desirable plants.

Picloram is relatively persistent in soil, especially in cooler climates. Since it is water soluble, care must be taken to prevent its movement into water used for irrigation. It should not be applied where it can be leached or moved to sensitive plants by rainfall.

Picloram has a low mammalian toxicity and is only slightly corrosive to spray equipment.

Triclopyr (Garlon) is a relatively new selective postemergence herbicide for use of rights-of-way, industrial and forestry sites, and experimentally for rangeland brush control. It can also be used to kill trees and brush by injection/cut-surface treatments.

It is readily translocated in plants and is moderately toxic to warm-blooded animals. It degrades rapidly in the soil.

Ester formulations are available.

Glyphosate is a nonselective herbicide effective against both grasses and broadleaf plants.

Glyphosate is readily translocated from leaf and stem tissue to roots, resulting in a high degree of kill on many weeds. It is inactivated by contact with the soil and should not injure newly-seeded plants in treated soil.

Glyphosate is sprayed in water carrier. It is presently registered for use for noncrop and pre-till weed control and as a directed spray for orchards, plantations, Christmas trees, and many other crops. It is corrosive to some equipment.

Broadcast sprays over woody species will damage desirable forage plants. Applications should be made to individual plants on noncrop areas or areas to be renovated.

Glyphosate has a low order of mammalian toxicity.

Amitrole is effective against poison ivy and poison oak. If amitrole is accidentally sprayed on desirable plants, they are less likely to be severely injured than sprays of phenoxys, dicamba, or picloram.

Amitrole is available as a powder

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Herbicide Directory *continued*

Herbicide	Brand Name(s)	Company	Uses
imidazoline	Arsenal	American Cyanamid	Broad spectrum systemic industrial herbicide
linuron	Lorox	du Pont	Short-term control of annual weeds in roadsides and fence rows.
mefluidide	Embark	3M	Growth regulator that suppresses Poa annua.
methyl bromide	Dowfume	Dow	Fumigant for pre-plant control. Also kills weed seed.
metham	Vepam	Stauffer	Preplant soil fumigant killing weeds, weed seed, insects and fungi.
metribuzen	Sencor	MoBay	Postemergence control of goosegrass in warm-season turf.
MCPP	MCPP Mecomec MCPP Chipco Turf Herbicide	SDS Biotech PBI Gordon WA Cleary Rhone Poulenc	Selective broadleaf weed control in turf. Often combined with other herbicides.
MSMA	Ansar Broadside Ansar Weed-Hoe	SDS Biotech Vertac Drexel Vineland	Postemergence selective control of crabgrass and broadleaf weeds in turf. Also, grassy weed control in ditchbanks, roadsides, industrial areas.
napropamide	Devinol	Stauffer	Selective control of weeds in ornamental beds and containers. Experimental combination with Betasan for season-long crabgrass control in turf.
oryzalin	Surflan	Elanco	Preemergence control of weeds in established ornamentals.
oxadiazon	Ronstar	Rhone Poulenc	Preemergence control of weeds in ornamentals and turf.
oxyfluofen	Goal	Rohm & Haas	Selective control of weeds in ornamentals.
paraquat	Paraquat	Ortho, Chevron	Nonselective control of weeds in rights-of-way, industrial areas and fencerows.
pendamethalin	Proturf Weedgrass Control	Scotts	Preemergence turf herbicide for control of grassy and broadleaf weeds.
picloram	Tordon	Dow	Systemic, long-term killer of woody plants and broadleaf weeds.
prometon	Pramitol	Ciba Geigy	Nonselective herbicide with long residual for industrial weed control.

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containing 50% active ingredient or as a liquid formulation. Another formulation, Amitrole-T, contains 2 pounds per gallon of ammonium thiocyanate in addition to 2 pounds per gallon of amitrole.

Amitrole is effective through the roots and tops of plants. Amitrole cannot be used where there is any possibility of residues on food or feed crops.

Fosamine (Krenite) applied as foliar spray will kill or suppress several different woody species on non-crop land. If it is applied to trees or brush in late summer or early fall, susceptible species will fail to leaf out the following spring and subsequently die.

Rates of 1-½ to 3 gallons of fosamine are applied per acre during the two month period before fall leaf coloration. If rainfall occurs within 24 hours of application, effectiveness may be decreased. Use only in accordance with recommendations on the label. Fosamine cannot be used on cultivated land or in pastures.

Inorganic Herbicides

Ammonium sulfamate (AMS, Ammate) is a nonselective herbicide. It is used extensively to kill all plants growing on rights-of-way.

AMS kills trees. It can be used as a foliage spray or in cuts through the bark. When applied to stumps, it prevents sprouting. AMS kills or supresses herbaceous plants as readily as woody plants.

It is corrosive. Spray equipment should be cleaned immediately and coated with diesel oil or similar light oils after use.

Oils Diesel oil and kerosene are commonly used to control honey mesquite and huisache. One cup to 1 gallon of oil is used per tree, depending upon its size. The oil is applied around the base of the tree during dry weather when the soil is pulled away from the trunk. Application at this time enables the oil to penetrate to the lower buds on the stem.

Oils alone are not very effective herbicides when applied to the foliage of woody plants. However, diesel fuel is commonly used as a dilutent and carrier for some oil soluble herbicides.

It is also used as a carrier in aircraft spraying, usually as a 1:4 oil-in-water emulsion. The oil reduces evaporation of the herbicide in arid areas and aids in penetrating stems and foliage of some woody plants. Water carrier, however, is equally as effective as oil carriers in some situations, such as use of 2,4-D on sagebrush.

continued on page 82

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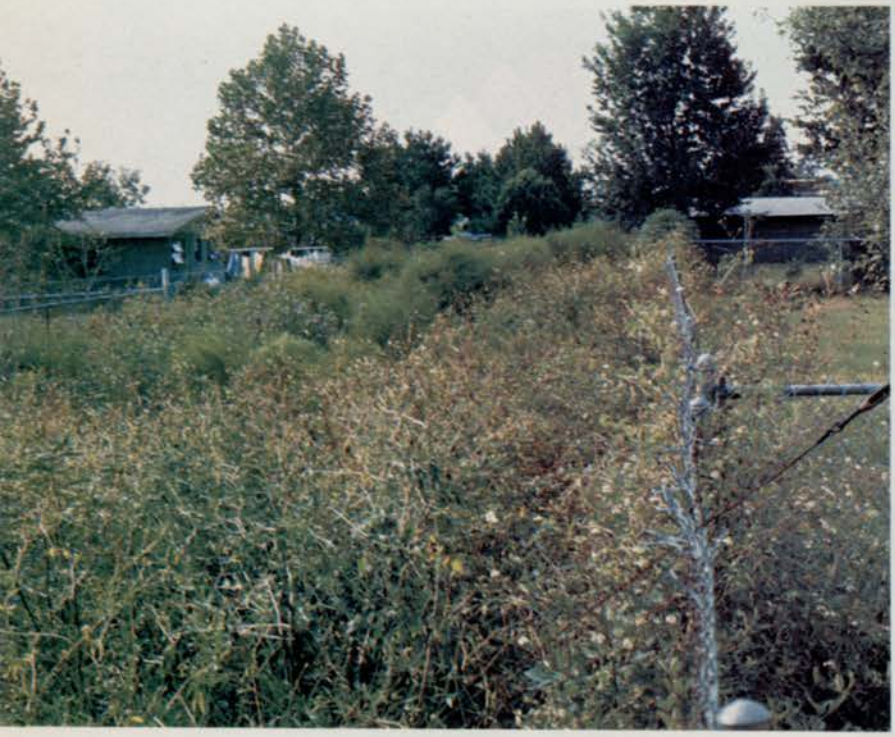

Aquatic Weed Control

Lakes, ponds, and streams are central features for many landscapes. Weeds in water features not only destroy their appearance, they also ruin the impact of the entire landscape.

Lagoons, holding ponds and ditches, although not landscape features, serve useful functions which are inhibited by weeds.

Control measures are limited by local regulations, desirable plants in the water, and uses, such as swimming, irrigation, fish farming, and air conditioning.

If a lake is part of a natural watershed area, there may be restrictions on the use of certain chemicals or weed-eating fish. Check with your local extension agent before treating, diverting, draining, or filling in any lake, even if it is on private property.

Preventative control

Typical conditions causing an aquatic weed problem are shallowness (less than 8 ft. deep), poor circulation of water in the lake and air above the lake, fertilizer runoff into the lake, and presence of dead organic material in the lake (such as fish, plants, or sewage). Concentrate on these faults first.

Bottom-rooted aquatic plants require light to grow. Below eight feet this light is inadequate for many aquatic plants. If a lake cannot be deepened, dyes or bottom liners can be added to shade the lake bottom.

Pond aerators add needed oxygen to water and help avoid temperature stratification of water layers. Without mixing, water tends to form layers of water based upon temperature, the warmest layer on top. Keeping surface

continued on page 86

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If you're not using Daconil 2787® on your golf course, you don't have many alternatives.

Sure you've used other fungicides. Even tried one or two of the new systemics. But they didn't measure up to diseases like dollar spot and brown patch. Tees, greens and fairways had a lot of problems. And you had a lot of headaches.

Unreliable, inconsistent disease control is the biggest reason more and more superintendents are getting back to regularly scheduled applications of Daconil 2787 fungicide. Because Daconil 2787 *is* the most effective and reliable fungicide you can use on tees, greens and fairways.

Daconil 2787 has a proven record of performance when it comes to delivering superior control of ten major turf diseases including: dollar spot (and benomyl-resistant dollar spot), Helminthosporium (leafspot and melting-out) and large brown patch.

What's more, Daconil 2787 resists wash-off. So it's always out there working even during heavy rains or watering. There's no need to add a costly spreader/sticker for full and even plant coverage because it's already built in to the formulation.

And there's never been a documented case of resistance in over 15 years of use.

Plus you just can't beat Daconil 2787 for economy either. As we've been pointing out for the last two years, Daconil 2787 is the most cost-efficient fungicide you can use from tee to green.

So this season make your fungicide Daconil 2787. It's the one fungicide you can count on to save you from a lot of disease problems and a lot of headaches too.

SDS Biotech™

Agricultural Chemicals Business
SDS Biotech Corporation
7528 Auburn Road, P.O. Box 348
Painesville, Ohio 44077

Daconil 2787®

The reliable turf fungicide

Always follow label directions carefully when using turf chemicals.

Circle No. 173 on Reader Inquiry Card

 from page 82

Herbicide Directory from page 80

Herbicide	Brand Name(s)	Company	Uses
pronamide	Kerb	Rohm & Haas	Poa annua control in warm season grasses. Also weed and grass control around woody ornamentals and Christmas trees.
sethoxydim	Poast	BASF	Postemergence control of grassy weeds around broadleaf ornamentals.
siduron	Tupersan	du Pont	Preemergence control of annual grasses in newly seeded turf areas.
simazine	Princep	Ciba Geigy	Selective control of annual grasses and broadleaf weeds in established bermudagrass. Also, used in industrial and aquatic weed control.
sulfometuron	Oust	du Pont	Non-selective industrial and selective in bermudagrass.
tebuthiuron	Spike	Elanco	Total vegetation control in non-crop areas.
trifluralin	Treflan	Elanco	Selective preemergence weed control in established ornamentals.
trichlopyr	Garlon	Dow	Systemic control of woody plants in rights-of-way and industrial sites.
2, 4-D	2, 4-D	Dow SDS Biotech Rhone Poulenc Vertac	Selective control of weeds in turf and numerous other areas. Usually mixed with other herbicides.
Vorlex	Vorlex	Nor-Am	Preplant fumigant. Broadleaf weed control in established turf.

Herbicide Combinations

2, 4-D plus MCPP	Chipco Turf Kleen Cleary Scotts II SDS Tee Time Lescopar	Rhone Poulenc WA Cleary OM Scott SDS Biotech Andersons LESCO	Broadleaf weed control in established turf.
2, 4-D plus dicamba	Scotts I Banvel Plus Lesco Selective Herbicide	OM Scott Velsicol Lesco	Selective postemergence control of weeds in turf.
2, 4-D plus MCPP plus dicamba	Trimec Trexan	PBI Gordon Mallinckrodt	Selective, Broad spectrum control of weeds in turf.
2, 4-D plus dichlorprop	Weedone DPC	Union Carbide	Selective postemergence control of weeds in turf.
2, 4-D plus 2,4-D plus dicamba	Trimec Ester	Bulkem	Selective, Broad spectrum control of weeds in turf.
2, 4-D plus dicamba plus dalapon	Banvel Plus	Velsicol	Broadspectrum, post-emergence turf weed control.

water temperatures down by mixing upper layers with lower, colder ones can discourage algae. Algae does not readily establish until surface water temperature reaches 60 degrees F.

Decaying organic matter removes oxygen from the water. Do not throw debris or clippings into the water. Dead plants should be removed from treated lakes if possible.

In certain states, various weed-eating fish are legal. They are restricted in certain states due to the fear they may reach major rivers and lakes.

Drawdown, or draining to expose aquatic plants to full sun or freezing temperatures, is used where fish or irrigation aren't factors. Dredging and aquatic weed harvestors are expensive and cause a disposal problem, but they may be the only way to get initial control over a serious aquatic weed problem.

Lakes require some vegetation to produce needed oxygen, to provide cover for fish and wildlife, and to appear a natural part of the landscape. Portions of the lake can be kept shallow to provide for aquatic plants. Another method is removable containers of plants submersed close to the water's surface. Desirable water plants, such as water hyacinth, are available from specialized nurseries. These container plants can be removed if necessary during treatment periods.

Certain aquatic herbicides may be absorbed by roots of nearby trees or plants which extend into the water. Read labels carefully for susceptible land plant species.

Curative control

In warmer climates aquatic weed control is an ongoing struggle with nature. In the North it is a seasonal fight beginning when water temperatures get above 60 degrees F.

Algae. If preventative measures aren't enough to stop algae, then copper compounds (Cutrine) are effective. Used at correct rates, these compounds do not restrict water use.

If a lake has a history of algae problems, start using copper compounds as soon as water temperatures get above 60 degrees F. Periodic retreatment may be necessary for season-long control.

Copper compounds are often mixed with other aquatic herbicides for control of a variety of weeds.

Floating Weeds. Floating weeds can be either free-floating or bottom-rooted plants which have leaves on the surface. They include hyacinths, duckweed, water lettuce, floating fern, water pennywort, and salvinia.

The primary herbicides for floating

Keep grass from chewing up your mowing budget. Spray Embark® PGR.

Keep the time spent mowing and trimming around trees, stones, fences, ponds, and other hard-to-reach areas—plus those long stretches of open grass—from feeding on your maintenance budget.

Spray a little Embark® PGR (Plant Growth Regulator) and slow the growth of most turfgrasses for at least 6 weeks, while your grass retains a healthy green appearance. This dramatically extends the time between mowings, so you can spend valuable

manhours on other tasks.

What's more, it typically now costs less to spray Embark PGR than to mow one time. And it can be sprayed over an area in about one-sixth of the time it takes to mow.

Take advantage of Embark PGR in parks and golf courses, on roadsides and airports, or wherever else you want to save the time and cost of mowing.

For more information, contact Agricultural Products/3M, 223-1N, 3M Center, St. Paul, MN 55144. Or see your local 3M Embark PGR distributor.

3M Hears You...

Circle No. 102 on Reader Inquiry Card

3M

2, 4-D plus prometon	Vegemec	PBI Gordon	Selective postemergence control of weeds in turf.
2, 4-D plus triclopyr	Turflon-D	Dow Chemical	Selective postemergence turf herbicide for broadleaf weeds.
Balan plus Ronstar	Regalstar	Regal Chem.	Broad spectrum preemergence control of weeds in turf.
amitrol plus simazine	Amizine	Union Carbide	Season-long control of weeds and grasses around ornamentals.
MSMA plus cacodylic acid	Broadside	Crystal	Nonselective, broad spectrum weed control.
diuron plus sodium chlorate plus sodium metaborate	Chlorea	Rhone Poulenc	Nonselective weed and grass killer.
Amitrole plus fenac plus atrazine	Fenamine	Union Carbide	Pre- and postemergence control of weeds for industrial sites and rights-of-way
bromacil plus diuron	Rout Krovar	Hopkins du Pont	Wide range control of weeds in industrial sites and rights-of-way
MSMA plus dicamba	Mondak	Velsicol	Noncropland general weed control.
prometon, simazine and chlorate	Pramitol	Ciba Geigy	Full-season weed control in industrial sites.

weeds are 2,4-D and Diquat. Sonar (Fluridone)is a broad-spectrum aquatic herbicide under experimental use.

Submersed Weeds. Weeds which are bottom-rooted and totally under water are called submersed weeds. They include hydrilla, pondweed, watermilfoil, and coontail.

The primary herbicides for submersed weeds are 2,4-D, endothall (Aquathol K), Diquat, and Sonar (experimental use only). Combinations of endothall and Diquat with copper are often used.

Emersed Weeds. These are weeds growing in shallow areas with stems and leaves above the water surface. They include cattails, duckweed, hyacinths, alligatorweed, torpedograss, and arrowhead.

Primary herbicides for these are Banvel, 2,4-D, dalapon (Dowpon), diuron (Karmex), Rodeo (glyphosate), Sonar (experimental use only) and amitrole.

Products registered for aquatic weeds are also the best to use for ditchbank weed control, since there is always a possiblility water containing herbicides in ditches will drift to other locations. Check labels for ditchbank applications.

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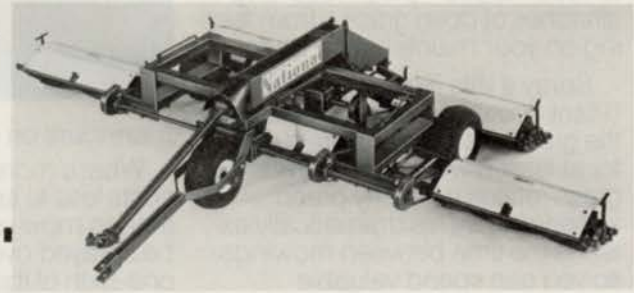

MODEL 68

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STOP GRUBS FROM THE FIRST BITE TO THE LAST GASP.

Grubs are a hardy breed. They're tough to prevent and even tougher to get rid of once they start chowing down on the roots of your turf.

One thing that puts them off their feed is ®OFTANOL 5% Granular insecticide.

Another is new OFTANOL 2 Insecticide. It's a liquid formulation of OFTANOL, containing two pounds of active ingredient per gallon.

The nifty thing about OFTANOL, liquid or granular, is that it stops grub damage fast, even before it kills. After an application of OFTANOL, grubs stop feeding and the damage stops. Use it as a preventive, in the spring, or as a curative anytime grubs are a problem.

Grubs, one serious problem with two serious solutions. OFTANOL. Always read the label before use.

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WHEN YOU'RE SERIOUS ABOUT GRUBS.

Mobay Chemical Corporation
Specialty Products Group
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P.B.I. Gordon Corp.
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Hopkins Agric. Chem. Co.
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ICI Americas
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Lebanon Chemical Corp.
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LESCO Products
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MoBay Chemical Group
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Monsanto Co.
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3M Agricultural Products
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WEED CONTROL GUIDE

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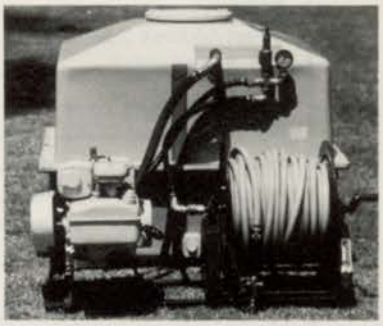

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Flyer
Fortress
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Creeping Bentgrasses
Penncross
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Circle No. 184 on Reader Inquiry Card

This twelve page guide is yours for the asking.

Order your copy today!

This booklet tells you what species and varieties of grass seed are used in sports turf mixtures and blends, plus many other facts for the sports enthusiast!

Call or write

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A Special Offer on Dyclomec® Herbicide

Save $10 on a Gordon Spred-Rite® G reuseable granule spreader loaded with Dyclomec. Read how this combination can help you turn problem areas into beauty spots.

Last year we put out several hundred of our patented Spred Rite G Spreaders, filled with Dyclomec, to find out what professional groundskeepers would think about such a deal.

The response was overwhelmingly positive!

One groundskeeper said, "You know how it feels to load up your 12-gauge and go hunting for quail? That's how I feel with my Gordon spreader when it's loaded with Dyclomec, and I go after fence rows and ornamental beds."

Another one of our friends gave us an impish grin and said, "When I take my Dyclomec spreader on a hunting trip around the landscape, I start to sing *I'm headin' for the last roundup*."

There's just no doubt about it! You're going to love having a Gordon Spred Rite filled with Dyclomec. Surely Dyclomec is the most efficient herbicide that has ever been offered to the professional groundskeeper, and applying it with a Spred Rite actually makes it fun.

How Dyclomec Works

Dyclomec granules are spread on the soil surface anytime except when the ground is frozen. Moisture carries the Dyclomec into the upper layer of soil and, because of adsorption, there is very little lateral movement.

Temperature and moisture activate the Dyclomec, and it radiates a herbicidal vapor barrier that continues for an entire growing season. The spent crystals disappear, leaving no residue.

In the vapor barrier no seeds can germinate, and any sprouts originating below the barrier will be killed when they try to penetrate it. Thus it is that a precise area can be kept absolutely free of any vegetation without harming desirable woody ornamentals, shrubs or trees that have deep roots extending below the vapor barrier.

If you have any questions, call us.

Toll-free 1-800-821-7925

In Missouri, 1-800-892-7281

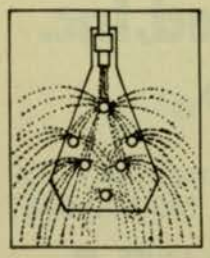
How you hold the Spred-Rite® controls the coverage.

Tilt deflector head down to release granules; tilt it back to stop the flow. Adjust swath width by increasing or decreasing the distance from the ground. Adjust granule output by changing the orifice disks which are provided.

THE SPRED-RITE G FILLED WITH 5 POUNDS OF DYCLOMEC, A REG. $24.50 VALUE

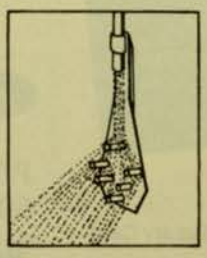
ONLY $14.50 WITH COUPON

Offer is not available west of the Continental Divide



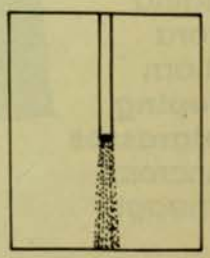
Scattered Swath

For applying Dyclomec over any broad area: in nurseries, orchards, graveled areas, around buildings. Hold spreader head parallel with the ground.



Directional Control

To apply Dyclomec along fences, roadways, ditchbanks, up to shrubs, and inside larger tree wells, point deflector toward target and adjust height from ground.



A Precise Line

Remove head for pinpoint application into cracks of driveways, along walks, around patios and in tightly circumscribed spaces. Control width by adjusting the size of the orifice.

Circle No. 164 on Reader Inquiry Card

See how Dyclomec turns problem areas into beauty spots ...

The grass along the fence in the photo at left was killed with a fast-acting systemic post-emergent herbicide. Obviously, no professional groundskeeper could abide this ugly mess, so the dead vegetation has to be removed with expensive hand labor. The systemic product is recommended for lawn renovation so, naturally, vegetation will grow back as new seeds germinate, resulting in an endless cycle of retreatment, ugly dead vegetation and more hand labor. Clean up a fence line with Dyclomec and vegetation will never again be a problem, because an annual pre-emergent application of Dyclomec will form a vapor barrier and keep the area absolutely clean.

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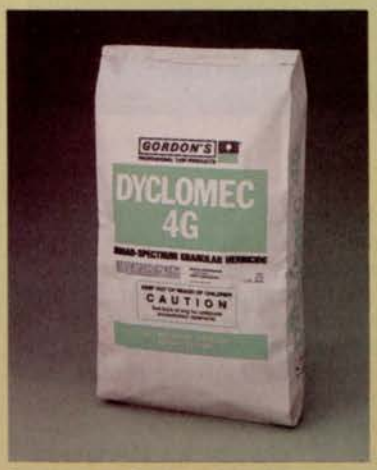

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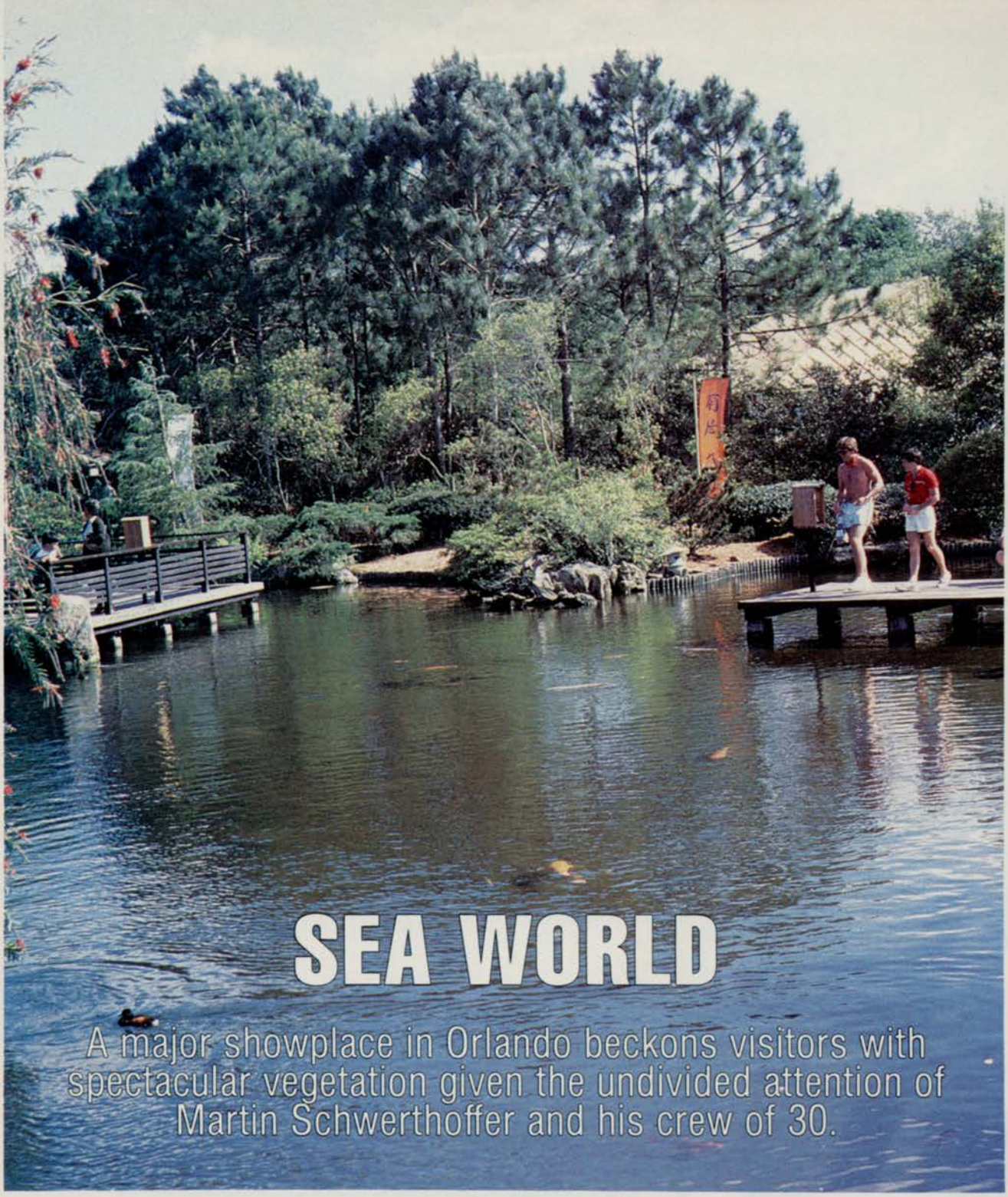

SEA WORLD

A major showplace in Orlando beckons visitors with spectacular vegetation given the undivided attention of Martin Schwerthoffer and his crew of 30.

by Barbara Betts

The biggest challenge for Martin Schwerthoffer at Sea World in Orlando, FL, is meeting the public's expectations.

With an estimated three million people treking through the marine life park each year, the director of landscaping and his 30-person crew labor diligently to make sure Sea World looks good 365 days a year.

Making the turf green and the flowers look as bright in February as they do in July is not always an easy job. Schwerthoffer and his crew have to work around limitations imposed by the sheer volume of people as well as the conditions of weather and soil. They try to meet the demand to be new and different.

Differences

Whether it means constructing a massive poinsettia tree and protecting it from sudden and unexpected frost or watering an eight-foot hanging basket of impatiens, Schwerthoffer is always "trying to get something different.

"I think people expect unique things from us," he maintains.

His crew is constantly changing the 36 annual beds scattered throughout the park.

"We change so there's a continuous run of color; so it's always different. If a bed looks bad, you pull it," he says.

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To meet these demands, the park's horticulturist raises some 30,000 annuals each year.

Demands on the park's greenhouse and nursery facilities continues to grow, not only to provide for the constantly changing color, but to provide for the demand for landscaping materials created by new Sea World projects. Crew member Jasper McLemore supervised the growth of more than 30,000 junipers in the last two years. The shrubs were recently installed around the new Shamu Stadium. Thirty different varieties of trees were also added for that project.

"I think people expect unique things from us."

The greenhouse and nursery operation has grown in Schwerthoffer's eight years at Sea World. When he came, the park had one greenhouse. Now there are five.

The biggest reason for the increased nursery operation? Savings. Schwerthoffer estimates that about $100,000 was saved by growing the trees and junipers to size.

The people

The crowds visiting Sea World are a major constraint for landscaping. The park is open year-round. It is important, the landscaping director says, to keep the grass green.

"People, especially from the North, come down here and expect to see green grass—no matter what the time of year."

Schwerthoffer says there are 38 acres of bahia grass and six of bermudagrass overseeded with ryegrass at the park. In the winter, except for the palm trees, the overseeded bermudagrass is the only green thing in the park.

The grass used to be kept green by painting it with a colorant. The color, Schwerthoffer says, was never very satisfactory. And it was costly to put down and maintain.

The overseeding program started two years ago with a search for the right ryegrass. Most ryegrasses, Schwerthoffer explains, were too thick. Then he started buying Lesco's CBS Blend ryegrass and is very satisfied with the results.

"It's turned out beautiful. The beauty of it is that it's a finer texture than we've used before. You can't tell it from the bermuda. We start overseeding in November. We get germination in a short period of time and have no browning or anything. It just goes right to town. There's less cost involved and it always looks good," Schwerthoffer says.

The bermudagrass-ryegrass acreage has to stand up to tough foot traffic, too. On one spacious green section near the Rain Forest, Schwerthoffer estimates more than 200 band concerts are held each year. And the ryegrass stays green.

Specialized needs

And how many landscape managers have to worry about keeping a tropical rain forest warm in the winter? At Sea World, the Rain Forest is kept temperate, despite freezing temperatures, by 200 gas heaters. The heaters, placed every eight feet in the one acre tropical patch, keep the temperature up when necessary, about 20 degrees above that in the rest of the park.

The specialized needs of the Sea World landscape, quite predictably, extend to the significant part animals play in the natural beauty of the park.

The crowds visiting Sea World are a major constraint for landscaping.

Not only can a visitor see Shamu, sea lions and exotic fish, but can mingle with the 5,000 rabbits, innumerable ducks and deer who wander freely about Sea World in Orlando. While visitors love the natural feeling, Schwerthoffer admits the animals place limits on his ability to cope with common landscaping problems.

Challenge continues

For Schwerthoffer and his crew at Sea World, the challenges continue. Not only do they intend to fertilize early this fall to avoid having flush new growth killed in a winter frost, and use a fertilizer with minors to cope with a soil system that ties up the iron, they will continue to realize the demands of their constituency. The crew will overseed more this year to make more green grass this winter. And they will continue extensive plantings at the nursery to prepare for their next new project—a luxury hotel across the street from the marine life park.

Satisfaction for Schwerthoffer and his Sea World crew will continue to be the delighted faces of families enjoying the green grass and beautiful vegetation. **WT&T**

Barbara Betts is editor of Lesco News.

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Circle No. 246 on Reader Inquiry Card

Landscape Fabrics

Turf managers rediscover old uses and invent new ones for various types of fabrics.

by Ron Hall, assistant editor

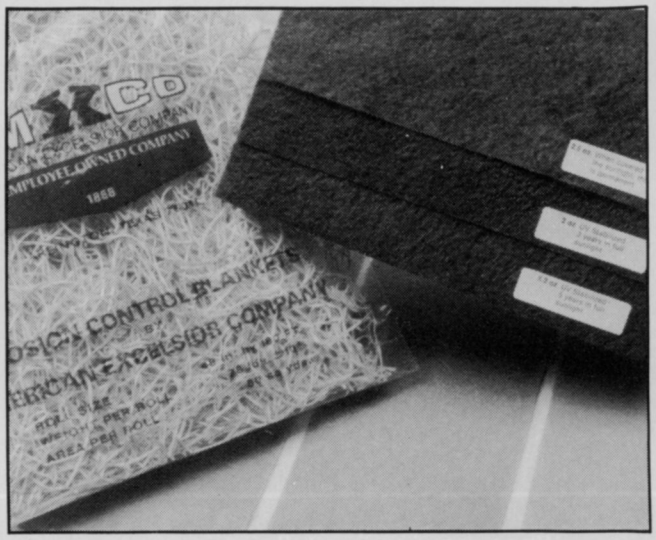
Turf managers are rediscovering a neglected old friend, the landscape blanket. This old acquaintance, redesigned in today's fabrics, has started to generate new interest.

Tobacco farmers learned years ago that putting a cotton cover over seedbeds allowed planting as early as February. In more recent years tobacco growers have gone from cotton to *Reemay*, a spunbonded polyester produced by DuPont.

Golf course superintendents in the north are learning that turf covers reduce desiccation and winter kill on greens. Stadium managers are discovering fabrics will protect turf in previously hopeless situations, while still others are betting they can germinate grass seed faster under them. Research is also being conducted to see if grass can be favorably grown through fabrics, or on top of them.

Where this will lead is unclear. What is clear, however, is that a handful of companies feel the science of growing and protecting turfgrass is ready for a variety of different covers. Concerns such as DuPont, Phillips 66, Amoco, and Warren Turf are testing the waters.

"These products have been out for a while, but all of a sudden everyone is saying, 'look what I've found'," says Tom Blunk, a former golf course superintendent. Blunk, a representative of Blunk's Wholesale Supply near Chicago, handles the Phillips 66 product *Duon*.



GreenSaver mat *by American Excelsior, Terra Bond by Warrens, and Duon from Phillips 66 are examples of the large variety of turf and grounds covers now available.*

Blunk is right. Ground covers aren't new. American Excelsior has been producing grounds blankets made of excelsior (Aspen wood fibers) for years for use on slopes, median strips, and other areas where a quick vegetative cover is needed.

Tobacco farmers learned years ago putting a cotton cover over seedbeds allowed planting much earlier in the year.

What's new is the ways covers are being used. And some of the fabrics themselves.

American Excelsior is almost 100 years old, but it's *GreenSaver* blankets with excelsior sandwiched between plastic mesh just started finding favor as a golf course greens cover in recent years. Oakmont Country Club, site of the 1983 U.S. Open, has used Excelsior's *GreenSaver* blankets with heartening results.

Covers of various materials have been used for erosion control and for separating sand and soil in golf course sand traps for years. The use of these same types of covers, with engineering improvements, may be ready to blossom in the turf industry. The spark is coming from far-thinking turf managers seeking solutions to specific problems.

Victory or disaster

Curiously, Michael Jackson, the superstar of the popular music set, gave it an unknowing boost during his "Victory" concert tour last summer and fall. The tons of scaffolding and equipment and the thousands of fans at the tour stops overwhelmed the natural turf in many of the top sports stadiums in the nation. The pop music triumph was a turfgrass mega-disaster.

But Cleveland field boss Dave Frey

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and Will Puffer of Hoechst Fiber (maker of Warren's fabric) put their heads together for Jackson's October 19 and 20 dates at Cleveland Stadium.

With an NFL Browns game just days away, Frey and Puffer came up with a nonwoven geotextile cover made of polyester. Frey applied pregerminated perennial ryegrass seed to the playing surface prior to laying 135,000 square feet of the light-colored, needle-punched material which is now being marketed by Warren Turf under the name *TerraCover*.

It takes uncovered greens three weeks to catch up to covered ones in the spring.

Although conditions were ripe for another turfgrass disaster ("we had five inches of rain before and during the concert," Frey recalls), the grass was basically undamaged after four days under the cover. Surprisingly, new grass had germinated, some of it growing to a ½ inch.

"There was darkening of some of the leaf but the crown of the grass plants were undamaged," Puffer says. "Of course we were very happy with the project. We came up with something that is durable, breathable, and survived the rigors of the concert. Furthermore, the cost of the fabric delivered is less than the cost of plywood."

The same cushioned fabric that Frey used was shipped to the Orange Bowl in Miami and to Phoenix for later Jackson stops, again with heartening results. Those successes have led Frey, and others, to experiment with *TerraCover* in the players' area along the sidelines and under television camera tracks.

Faster greenup

Using geotextile covers (the word geotextile includes just about any product that covers the ground) to protect grass is no secret to golf course superintendents. In the far north where cold, dry winds rake exposed greens some superintendents have been using covers for several years to reduce dessication and winter kill. Several, however, are testing the effectiveness of the various new products to determine if they can be used for a faster spring greenup of healthy turf and, hopefully, a longer season.

Doug Mahal at Interlochen near Minneapolis has been covering the greens on his course with excelsior mats by American Excelsior since 1977, but this season he's putting down *TerraShield* by Warren Turf and *Reemay* also. Jerry Nelson at the Somerset Country Club near St. Paul has been testing eight different covers on 8-by-12-foot plots, while Mark Smith at the Minneapolis Golf Club covered a third of his greens with *Reemay* last winter and will be doing some work with *TerraShield* also this winter.

The covered turf "comes out looking a lot better in the spring, but after three weeks the uncovered turf has generally caught up to it," says Smith. Others report similar experiences with covers. Nelson reports greener turf under all his test plots. "It's all in varying degrees," he says.

Since heavy snow blanketed much of the north last winter many of these same superintendents are anxious to determine how their blanketed turf responds to icy conditions.

Several precautions are necessary prior to laying and anchoring covers over greens, however, the superintendents say. First, the greens should be well drained and, equally important, fungicides should be applied to reduce disease pressure. Timing of the cover's installation and removal is also important. Grass should be dormant when they are applied, superintendents say, and covers should not be left on after regeneration has begun in the spring. Too much growth is undesirable.

"There are significant opportunities in the Green Industry for properly designed fabrics that meet particular needs."
— *Puffer*

Getting turf blankets to stay put can be a problem also. Central Indiana landscaper Larry Runyon wanted to make sure his covers didn't blow away. In addition to the U-shaped fasteners which came with the fabric, he anchored and criss-crossed 18-gauge wire every 10 feet over the covers of two football fields he seeded this winter.

Runyon is going a different direction with the geotextile covers he uses.

Runyon is using DuPont's spunbonded polyester *Reemay* in hopes of getting a jump on spring in the seeding of the two grass practice fields at the Indianapolis Colts' new 30-acre training facility just outside Indianapolis. Because of construction delays Runyon wasn't able to seed the fields until December 5.

He is hoping that *Reemay* helps retain moisture and warms his 50/50 mix of Kentucky bluegrass/ryegrass enough to give him a month headstart in preparing his fields for the Colts. He chose the DuPont material because it was translucent. "It's definitely going to let the sunlight in and I'm hoping for that good green color," he says.

While several of the products are translucent and allow light to penetrate to the turf, several are not. *Duon* by Phillips 66 is a dark gray and its promotors believe it may promote protection and early green up by raising the soil temperature somewhat.

Research needed

Initial research in the use of covers for germinating grass seed has been spotty and inconclusive. Clemson horticulture professor Landon Miller had little success with growing grass both over and under continuous filament spunbound polyester covers during 1984 and he's repeating his research on five different varieties of grass with broken filament spunbound material this year.

A test by Don Marshall using *Reemay* at Anaheim Stadium in Southern California to lengthen the growing season of Bermudagrass into December had to be cut short because of torrential rains and the return of the NFL Rams to Anaheim for a playoff game. Or as Marshall notes, "basically, the test amounts to no test."

But, designers and manufacturers of the new generation of turf covers remain optimistic about the potential uses of their products. The challenge seems to be matching the correct product with the specific use.

"There are significant opportunities in the Green Industry for properly designed fabrics that meet particular needs," Hoescht Fiber's Puffer says. "The challenge then clearly rests with the industry to meet the needs and produce those products. They must meet the challenges of the application rather than making one product for all applications."

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Timely response can save native pines

If native pines around your home or development are dying, the problem may be traced to either pine decline, insect attacks, or disease, according to Wayne P. Blythe, Vero Beach, FL, director of Native Resources, the environmental division of Vista Properties. He directs his advice to others, like himself, who are responsible for preserving the beauty of pines, particularly in the Southeast.

Pine decline, characterized by the gradual yellowing and dying of pines, can be caused by over irrigation, or by irrigation from wells with a high calcium concentration which raises the soil pH. Irrigation from storm water retention ponds in high fertilization areas such as golf courses also contributes.

Sometimes only simple precautions are needed to remedy the problem, Blythe notes, like reducing irrigation near pines by redirecting sprinkler heads, or using only ammonium sulfate or other acid-forming fertilizers to prevent a rise in soil pH.

To achieve a quick green color as a temporary solution, Blythe recommends four lbs. of flowers of sulfur per 100 sq. ft., 10 lbs. aluminum sulfate per 100 sq. ft, or one lb. iron chelate per tree.

Insect attacks—either trunk or crown infestations—can create big problems and call for immediate action, Blythe says.

Engraver Beetles (Ips gradicolis, Ips calligraphus) and Black Turpentine beetles attack pine trunks, and are found throughout Southeastern forests. Usually the first indication of attack are small masses of pitch (called pitch tubes) and boring dust on or around the trunk of the tree, followed by browning of the needles. Another form of bark beetle attacks the branch area of the tree. Pitch tubes of these beetles are often small, and experienced spotters or binoculars are usually necessary to detect them. If the tree is healthy, attacks by bark beetles may not be successful.

Beetles are attracted to pines which have either been cut or placed under stress. This stress can be natural such as a flood or drought, or man-made, equipment wounds, excess irrigation, or pH change.

Blythe recommends the following steps to control insects:

1 Leave the native understory plants undisturbed near the pines.

2 Downed pines should be cut up and removed immediately.

3 Pines injured during clearing operations should be sprayed with appropriate insecticide.

4 Severly infected trees should be removed immediately.

5 Trees cut up for firewood should be stacked away from living pines. Spray the firewood with insecticide.

In spraying, Blythe recommends 0.5 percent Lindane or 1.0 percent chlorpyrifos (Dursban 4E), with Lindane getting the nod for preventative treatment, chlorpyrifos for post infection treatment.

Disease problems are often harder to detect than insect pests, but in the Southeast be on the lookout for pitch canker and needle cast.

Canker, caused when spores of the fungus enter the tree through a wound, is the more serious. Symptoms include branch and terminal flagging and the flow of pitch from the infected area. Blythe feels pruning infected branches well below the infected area is the best response. In severe cases the tree should be removed.

The unseasonal shedding of needles or shedding in an excessive amount could signal the presence of needle cast. A magnifying glass or hand lens often reveals small black elliptical fruiting bodies of the fungi on the fallen needles. No control measures are recommended since this problem rarely kills a tree, Blythe notes, and infections usually occur long before symptoms are evident and then it's useless to apply fungicides.

Blythe says pines should be examined at regular intervals for timely pruning and removal of unhealthy specimens. This reduces the need for removal of trees and maintains the aesthethic quality of the environment around you.

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PROBLEM SOLVERS

by **Balakrishna Rao**, Ph.D

Tender loving care

Problem: *As part of recent street improvement projects, large trees (maple and locust) have been planted in a four foot by four foot sidewalk opening. Will these trees ever mature to their natural dimensions; will they be suppressed; will they die in the future? (Ohio)*

Solution: It would be difficult to expect the plants to grow and mature to natural dimensions as they would in their natural environment (niche) because of the new and restricted four foot by four foot root area in the sidewalk.

The root system and the shoot system of plants are in equilibrium. Restricting root growth will proportionately restrict shoot growth. Studies have shown that it may take two to five years for most plants to establish after transplanting. During their recovery period they are very sensitive to environmental stresses which can then predispose the plants to insects and/or diseases.

Under these conditions, plants will be suppressed; however, to what extent depends upon the proper care given to the plants during and after planting. Some of the factors which affects plant health are soil, organic matter, soil acidity, aeration, water-holding capacity, drainage, and proper watering and fertilizing practices. Observation pipes installed in the ground within the dripline should help you monitor the drainage condition.

With proper cultural practices and other plant health management approaches, the plants should have a better survival potential, so consider giving all tender loving care to help improve the vitality of your plants.

Poast controls bermudagrass

Problem: *A new product called Poast is being tested for use in controlling bermudagrass in woody plant beds. Have you heard about this? Would appreciate your comments in this regard. (Maryland)*

Solution: Yes, Poast, a postemergence herbicide manufactured by BASF Chemicals Company, can be used to control bermudagrass in woody plant beds. Poast is a new, systemic, selective herbicide which can be safely applied at the recommended rates to control annual (1 pint per acre) and perennial (2 pints per acre) grasses such as bermudagrass, quackgrass, etc., in ornamental plants or ground cover growing areas. BASF representatives indicated that grasses growing up to six inches in height can be satisfactorily controlled with one pint per acre.

The material will be absorbed by the actively growing foliage and translocated to roots, eventually killing the plants.

Reportedly, there will not be any soil residual activity of the herbicide or any injury to broadleaf plants, including ornamental plants. Depending upon geography and climatic conditions, treated grass plants may discolor first and then die within two to three weeks. Since there is no soil residual activity, repeat application may be necessary if grass plants present a problem later in the season.

Inorganics and microorganisms

Problem: *Does inorganic fertilizer kill or tend to destroy microorganism activity in the soil? Is organic fertilizer better for the long term life of soil? (Wisc.)*

Solution: Application at the recommended rate of either inorganic or organic fertilizer to soil should not have any direct effect on microorganisms.

However, if over applied, fertilizer may affect the soil pH or release excessive salts which may injure the root system of plants. This may then affect the plant, soil, and microbial ecology. Natural organics such as sewage sludge or milorganite application may temporarily improve soil structure which, in turn, can be favorable for microbial activity.

Wood mulch still best

Problem: *Will the replacement of bark mulch with 1 3/4 inch stone in shrub beds cause any long-term problems with shrub growth and development? Plantings are made up of mostly pines, yews, junipers, azaleas and rhododendrons. (Maine)*

Solution: A review of information relevant to your question indicates that there isn't a simple "yes" or "no" answer. I've seen stones, pebbles, gravel and other inorganic materials used as mulch, but I'm more familiar with the organic mulches, ie. wood and bark chips.

My observations are that when rock mulch is used there usually is a sheet of plastic film beneath it. The plastic, usually black in color, is for weed control and it may cause problems for woody plants. I often find poor aeration and too little or too much moisture in the underlying soil.

Poorly aerated, wet soil plus the root and collar rot organisms commonly found under such conditions can cause root loss, reduced growth, and/or death of the entire plant.

When the rock mulch has been in place for several years it is, in my opinion, not very attractive because weeds and other things grow in or on the litter that accumulates among the stones.

With most organic mulches such debris simply blends in. The appearance of bark-mulched beds can be easily improved by a top dressing of fresh material.

Renovation of rock-mulched beds means removing the existing layer of rocks, putting down new plastic and spreading around new or clean stones. Where black plastic isn't used weeds are a problem.

Herbicides often become the only means by which beds are kept free of these unwanted plants. Repeated contact with herbicides through drift and/or root uptake can injure or kill the desirable plants.

Balakrishna Rao is Director of Lawn Care Technical Resources for Davey Tree Expert Co., Kent, OH.

Questions should be mailed to Problem Solver, Weeds Trees & Turf, 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Please allow 2-3 months for an answer to appear in the magazine.

WHEN LAWN CARE IS YOUR BUSINESS, DEPEND ON THE BEST IN THE BUSINESS.

Tough, durable, and reliable, the best in the business. That's SNAPPER's heavy duty lawn and garden equipment for you. More than a quarter of a century of innovative American craftsmanship goes into every machine we build. So you know you can depend on them year in and year out to make you look good on each and every job. That's why over the years SNAPPER's reputation for excellence has continued to grow and gain the respect of more and more professionals in the lawn care business. They know SNAPPER's versatility and durability has withstood the test of time. They know SNAPPER's built tough to work long and hard. So if lawn care is your business, why not go with the best in the business. SNAPPER's commercial lawn and garden equipment. Write SNAPPER Power Equipment, McDonough, GA 30253, Dept. WT 853 for further information.

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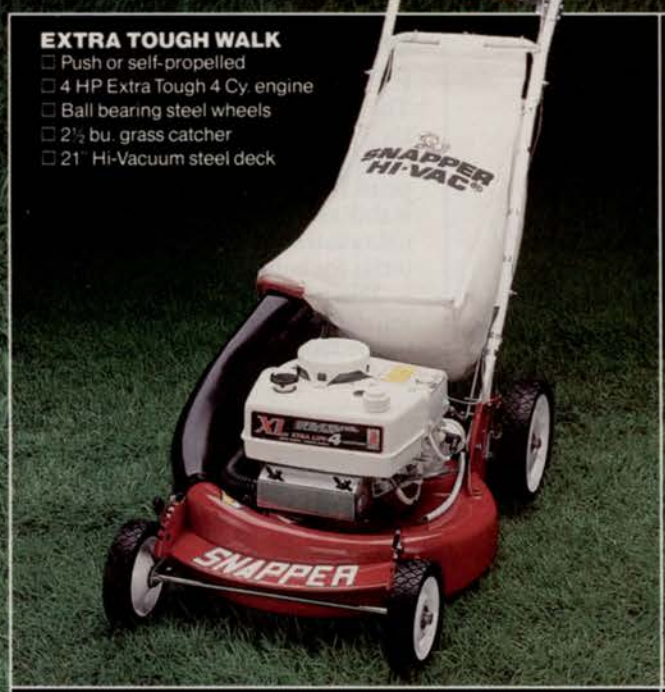

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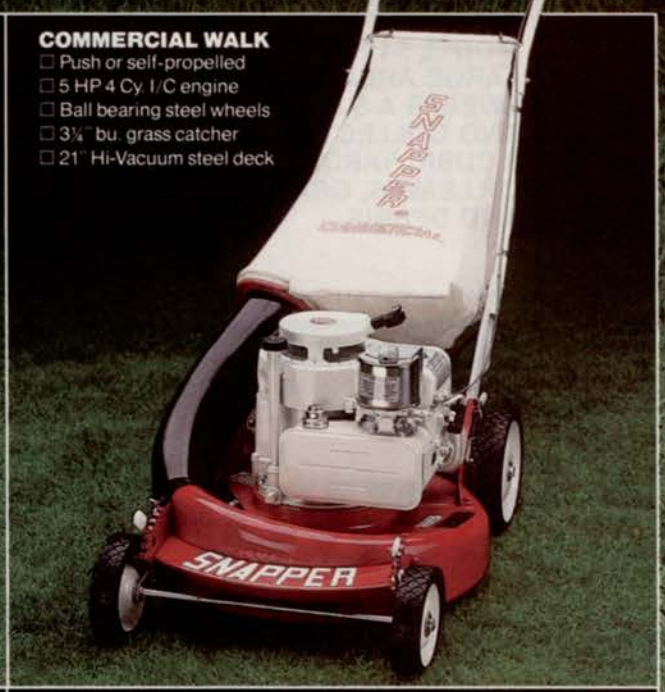
- ☐ 21" Hi-Vacuum steel deck



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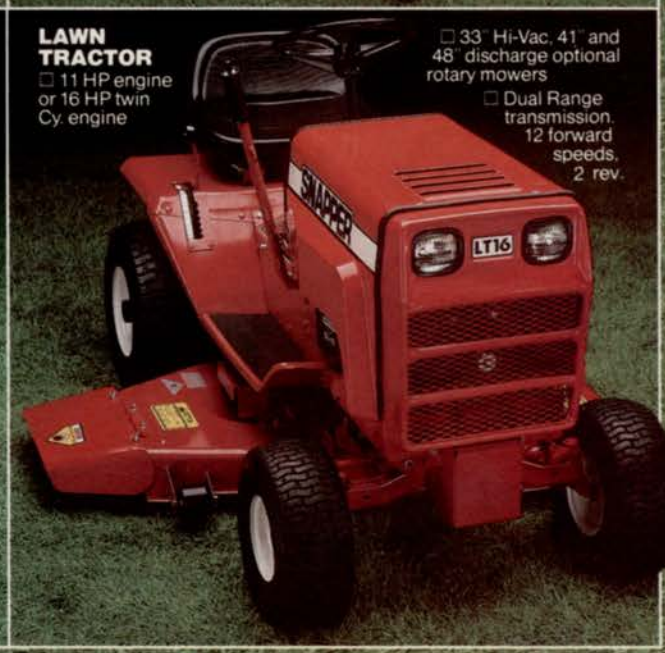

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Circle No. 176 on Reader Inquiry Card

Monsanto's Rodeo for aquatic weeds

Monsanto has introduced Rodeo, a broad spectrum aquatic herbicide for the control of emerged grasses, broadleaf weeds and brush growing in and around aquatic sites.

Rodeo offers effective control of more than 90 kinds of emerged grasses, brush and broadleaf weeds, no residual soil activity, no leaching into nontarget areas and is nonvolatile.

It is practically nontoxic to mammals, birds and fish and is biodegradable into natural products. It does not bioaccumulate in the food chain. It is essentially odorless and is completely miscible and mixes readily with water.

Rodeo has herbicidal activity on many annual and perennial grasses, broadleaf weeds, sedges, rushes and woody plants. Rodeo can be used to effectively manage both emersed and floating plants as well as ditchbank or shoreline aquatic weeds. Rodeo is not effective on plants which are either completely submerged or have most of their foliage under water. Application rates vary, depending on the weed species and its stage of development. The stage of maturity of the weed species to be treated is a primary consideration for obtaining best results.

Circle No. 190 on Reader Inquiry Card

Olathe "CLEAN SWEEP"
TURF SWEEPERS

MODEL 54 HIGH LIFT LARGE AREA SWEEPER SWEEPS A 5 FT. SWATH AND COLLECTS 3 CUBIC YARDS OF LEAVES, GRASS AND DEBRIS.

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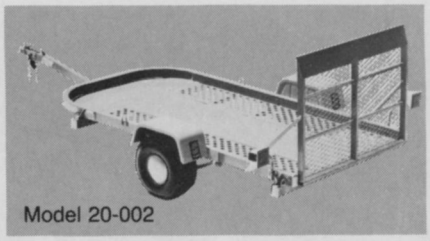
Circle No. 160 on Reader Inquiry Card

Seaman-Maxon offers pond lining machine

The Seaman-Maxon Company offers its soil stablilization machine to create hydrogiological barriers for pond liners. The machine mixes and stabilizes the pond bottom, usually using soil cement, and readies the material for compaction.

Where a rubber liner is needed, the soil stabilizer will reduce puncture points via its thorough mixing action up to 12 feet deep and seven feet wide per pass.

Snowco Utility Trailers
...now even more versatile!



Model 20-002

Ideal for hauling grounds maintenance equipment, ditchers and other bulky, hard-to-handle items, the proven Snowco line includes eight flatbed trailers with loading ramps or tilt decks, plus a box bed trailer with tailgate.

The design of the popular ramp loading trailers—with perforated steel decks—has been improved for increased versatility. Three models are offered with capacities of 1,150 to 4,200 pounds.

Five tilt trailers with perforated steel decks are offered with capacities of 1,000 to 3,500 pounds.

The steel box bed trailer—capacity 1,200 pounds, is available with an optional canvas or fiberglass cover.

Model 20-006

Snowco
4386 McKinley, Omaha, NE 68812

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Please send Utility Trailer information.
Name
Organization
Address
Phone
City State Zip

Circle No. 177 on Reader Inquiry Card

NEW IMIDAN® 1E REALLY KNOCKS 'EM OUT OF THEIR TREES.

INSECTICIDE

With its new, easy-to-use liquid formulation, Imidan® 1E means big problems for your biggest pests in trees, shrubs and evergreens.

Imidan 1E is quickly becoming the spray to use when you spot infestations of gypsy moth, tent caterpillar, Japanese Beetle, inchworm, mealybug, or dozens of more dangerous and hungry tree pests.

Imidan 1E offers quick knockdown and good residual, cleaning trees of problems. But at the same time, Imidan is easier on beneficial insects than most other leading insecticides.

In fact, biodegradable Imidan is the perfect complement to the Integrated Pest Management (IPM) program. You keep beneficials working with you instead of having to fight on alone.

So see your distributor about new Imidan 1E or Imidan 50WP.

Stauffer Chemical Company, Specialty Products, ACD, Westport, Connecticut 06881. Always follow label directions carefully.

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INSECTICIDE

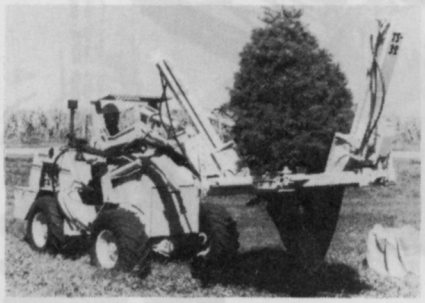
TOUGH ON PESTS, EASY ON BENEFICIALS.

Circle No. 192 on Reader Inquiry Card

Circle No. 202 on Reader Inquiry Card

Vermeer shows new TS-32S Tree Spade

Vermeer's new TS-32S Tree Spade is an economical unit designed to handle large volumes of shrubs and small trees (3 inch in trunk diameter) and should be ideal for nurseries, tree farms, and various landscape operations. Tree ball capacity is 32 inches in diameter, 30 inches deep, and roughly 500 lbs. (depending on moisture content).



The 1,800 lb. unit features three heavy-duty steel spades driven by hydraulic motors through a chain reduction drive assembly. Hydraulic gate open, close, and lock is also standard. The TS-32S adapts to both loader and 3-point hitch equipped tractor.

Circle No. 203 on Reader Inquiry Card

3 or 4 wheels available on Cushman model

The 1985 Cushman Front Line Mower with 17-hp diesel engine can be ordered with either 3-wheels or 4-wheels. The 4-wheel Front Line is available as a factory-installed modification with extra wide 4 ply 23-8.50 X 12 tires on the front and 16-6.50 X 8 rear tires.

The 4-wheel Diesel Front Line still offers a zero turning radius with brake assist, making it one of the most maneuverable front rotary

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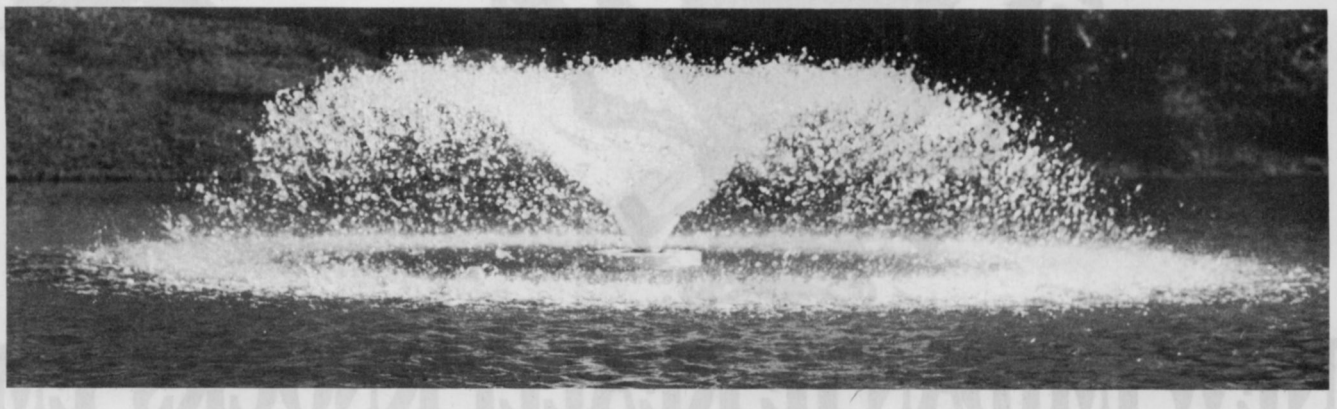

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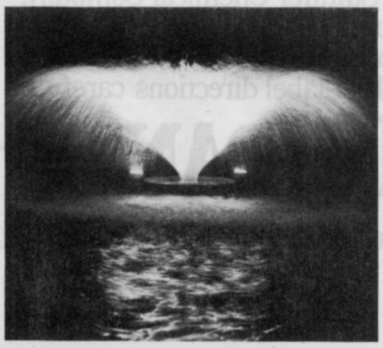

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Circle No. 107 on Reader Inquiry Card

WHAT HAS PLCAA DONE FOR YOU LATELY?

TAKE A LOOK.

If you haven't checked out the Professional Lawn Care Association of America recently, then you're in for a surprise. We're offering a bundle of new benefits that make joining PLCAA more rewarding than ever! We even have a new name for our service—**The ProSource.** Here's what we've been up to and how you can benefit:

- **NEW! Employee Life/Health/Disability Benefit Program.** A program designed with your business in mind. It offers flexible, comprehensive Life/Health/Disability group insurance that you can tailor to the needs and budget of your company.
- **NEW! PLCAA Safety Manual.** Emergency procedures, pesticide safety procedures, inspections, health programs and more—a complete, practical safety guide for reference and technician training.
- **NEW! PLCAA Management Monograph Series.** In-depth, easy to understand reference booklets on subjects vital to the operation of your business.
- **NEW! Legal Update Bulletin.** An exclusive monthly bulletin for members. Edited by PLCAA Attorney, Richard I. Lehr, and focused on tax, investment, labor, and legal information of interest to the industry.
- **NEW! Public Issues Alert Committee**—continually updates the membership on regulations and legislation—local, state, and national—that affect the lawn care industry. A resource for understanding and involvement in the public issues vital to the future of your business.
- **Plus a Whole Lot More...**PLCAA membership offers, in addition to these new benefits, an impressive lineup of publications and programs that are invaluable to any lawn care business: • **PLCAA Technical Resource Manual.** An important guide for helping to operate your business on a professional and agronomically sound basis. • **Turf Talks,** PLCAA's bi-monthly member newsletter. • **PLCAA Regional Seminars.** Intensive, one-day sessions offered on a regional basis and at a reduced fee to members. • **Annual PLCAA Conference and Show.** The week-long gathering of the best in lawn care that has become the one must convention of the year. • **The Professional Lawn Care Credit Association—**On hand to help you meet your delinquent account collection needs. • **Insurance Clout—**Comprehensive Property and Casualty Insurance that offer members excellent protection at competitive rates.

No matter how large or small your operation, the **ProSource** is your source for the best, most meaningful lawn care information and help. Your membership investment goes to work for you immediately—that's the PLCAA promise. Join now and grow with us!

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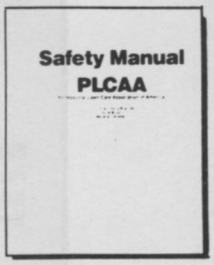

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Circle No. 139 on Reader Inquiry Card

mowers on the market, according to Cushman engineers.

The diesel engine on the Front Line Mower is equipped with a Stanadyne water separator that takes up to 95 percent of the water out of the fuel to reduce repair costs from fuel contamination.

The 1985 diesel Front Line is also equipped with an overheat warning system that warns the operator if engine coolant temperature starts to exceed safe levels. A test button has been added, so the operator can

ensure the overheat system is functioning properly before starting work. A key switch system has been added this year, which activates an electric solenoid on the injector pump to shut the engine off, minimizing the chance of the operator leaving the key on and running down the battery.

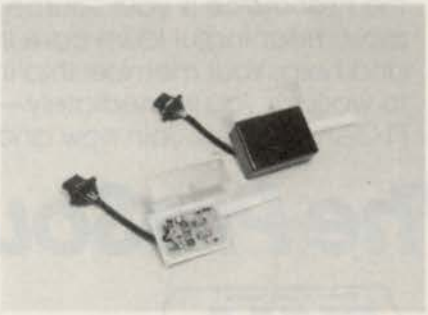
The Front Line is also available with many accessories.

Circle No. 192 on Reader Inquiry Card

Speed control switch means reliability

All of Columbia ParCar Corporation's electric golf cars now come equipped with a solid-state speed control switch for reliable performance and extended life.

The new Softstart electric switch has an integrated circuit board that eliminates mechanical breakdowns



caused by speed switch contact burning and increases overall service life.

The Softstart speed switch also prevents drive train damage due to operator error. If the switch is acci-

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dentally turned from reverse to forward or vice versa the Columbia switch automatically allows the car to slow before changing direction, then it accelerates smoothly and evenly. This prevents drive train damage, burned turf from spinning tires and the sudden vehicle jerk typical with other systems.

Circle No. 193 on Reader Inquiry Card

Test kit for acid rain

Acid rain, snow, lake or stream water can be instantly measured for its pH value (acidity or alkalinity) by anyone, with Hellige 680-AR Test Kit. Ideal for environmentalists, survey teams, foresters, students, it is also practical for routine pH testing of water, wastes, process fluids, soil extracts, etc.

Tester also calculates treatment dosage of neutralizer needed to bring acid water back to recommended 6.5 pH level.

Priced under $10, the portable kit is

a compact 5X4X2 inches and weighs 6 oz. There are no mechanical or electronic parts to go wrong. Comes complete with two harmless reagents, enough for 200 tests. Covers not only acid range, but entire acid-neutral-alkalinity pH scale from 1 to 11 in 16 steps.

Circle No. 194 on Reader Inquiry Card

Versa-Cart is lightweight, strong

A new multi-purpose utility cart that can carry loads up to 700 pounds and can be maneuvered by farm or lawn tractor or by hand has been developed by KCI.

The Versa-Cart System is made from two separate sheets of durable polyethylene, each vacuum-formed

← Circle No. 122 on Reader Inquiry Card

and sealed together. Cross-ribbed construction adds to the cart's strength. The Versa-Cart loads and hauls three times the volume of the typical wheelbarrow. Its unique V-shape helps concentrate the load so that the weight is distributed over the axle.

The cart can be operated by hand or can be attached with a tow bar to a farm tractor, lawn tractor or three-or-four-wheeler. It can be dumped with an unloading handle which is easily reached from most tractor seats.

Circle No. 195 on Reader Inquiry Card

Arbor Master 70, safe, dependable

Burkeen Manufacturing Company announces another quality underground product.

Burkeen, manufacturer of cable plows and trenchers for many years, is introducing the Arbor Master 70 Tree Spade.

This truck-mounted unit has six spades for easier ground penetration, a 4,500 pound root ball for less root damage and better tree livability. The six spades allow better holding of the root ball during ball and basket operations. The controls are simple to operate and are located for optimum visibility and safety.

Circle No. 196 on Reader Inquiry Card

New Hustler 250 for extra edge

Excel Industries has introduced the Hustler 250, a new hydrostatic, 18 hp, 51-inch utility-sized mower. The 250 features one-hand twin-lever steering, zero-degree turning radius, a unique forward-deck design, superior vacuum cutting action and the popu-

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lar convenience of rear discharge, making it possible to trim on either side of the deck.

"Because of its competitive price, commercial quality components and a two-year limited warranty on the entire unit, we're convinced that the 250 will become the standard by which other mowers in the 50-inch market will be judged," said Dave Welfelt, Excel Product Manager.

The machine is recommended for landscape contractors, apartment complexes, condominium developments, cities, cemeteries or any place where light commercial applications are required.

Like the rest of the Hustler product line, the 250 has dual hydrostatic drive for infinite control of speed and power for each drive wheel—forward and reverse. The direct drive wheel motor eliminates chains, sprockets and other high maintenance items that are subject to failure on other units.

The 250 has many other features and options.

Circle No. 197 on Reader Inquiry Card

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Circle No. 134 on Reader Inquiry Card

Kees unveils 60-inch mower with sulky

F.D. Kees Manufacturing introduces a new 60-inch mower with a two-point, caster-wheeled sulky. The mower is powered by an electric-start, 16-hp Briggs & Stratton engine.

The baffled underdeck design provides for a clean and safe discharge. Also featured on the 60-inch mower are: a cam-activated pully which maintains constant belt tension under light and heavy loads, two six-inch scalp prevention rollars, fingertip controls, and a four-gallon fuel tank. The sulky detaches easily for difficult side hill cuts or loading the Kees 60-inch mower on and off truck beds.

Circle No. 198 on Reader Inquiry Card

Rain Bird introduces low cost controller

The new RC-7i irrigation controller by Rain Bird Inc. offers flexibility and reliability in a low cost, indoor mounted unit.

Designed for residential use, the electro-mechanical seven-station controller features a 14-day calendar dial, 24-hour clock, master valve/remote pump start capability, and master on/off switch, all in a rugged thermo plastic cabinet. The RC-7i allows up to 23 automatic starts per day. Station timing from three to 60 minutes allow for maximum versatility in irrigation scheduling.

The RC-7i uses a convenient external plug-in transformer and has a multi-valve capacity of two Rain Bird 24 VAC solenoid valves.

Circle No. 199 on Reader Inquiry Card

Elanco announces new lawn, garden products

The Elanco Company introduces a new line of lawn and garden products for 1985, including:-Spike 20P, loaded in a five-pound dispensing container and delivered in a measured quarter-ounce pellets. The five-pound container is enough to kill brush and keep

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- Greater range. Better control.
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- Less wear and tear on you and the hose.

Specify Hannay Reels for all your spraying operations. Write for your FREE Specification Catalog today.

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Circle No. 127 on Reader Inquiry Card

it out of a 22 sq. ft. area for three years or longer.

-Spike Treflan 6G, available in 50-pound bags and designed for low cost, bare ground weed control.

-Sprayable Surflan herbicide, for full-season control of annual weeds, crabgrass, goosegrass, and certain broadleaf weeds in established Bermudagrass turf.

-The new quart size of Treflan herbicide for long-lasting weed control in ornamentals, flowers, and vegetable gardens.

-And new Elanco XL, for extra-long lasting weed control for annual grass in warm-season turf.

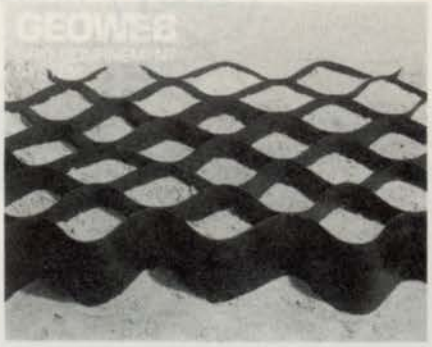
Circle No. 200 on Reader Inquiry Card

GEOWEB helps with landscaping needs

Presto Products Inc. has introduced two products for the professional landscaper—the GEOWEB Grid Confinement System and GEOBLOCK Landscaping System.

The GEOWEB Grid Confinement System is an expandable honeycomb structure used to confine cohesionless or unstable soils, sands or gravel.

Developed by the U.S. Army Engineers Waterways Experiment Station and Presto Products, Inc., this system is simple to install and extremely durable. A space-saving 11-foot X 5 X 8 inch shipping size expands to an 8-foot X 20 X 8 inch size in use.



GEOWEB has been used successfully to build roads, control erosion, construct boat ramps and to construct barrier walls.

An alternative to hard surface pavements, GEOBLOCK Landscaping System supports pedestrian and vehicular traffic while maintaining a thick cover of grass.

Made from lightweight, high strength, reinforced plastic, the interlocking GEOBLOCK System creates a

Circle No. 131 on Reader Inquiry Card

Premier Cut

Buy the 1985 Turf King at the rollback price!

Cash in on the current Turf King rollback to the 1981 price, while enjoying all the latest features: Power-driven reels; hydrostatic traction with foot-operated treadle to match mowing speeds to terrain; ±25° vertically articulated reels for a smooth, quality cut; a 14-hp, cast-iron engine; hinged hood for easy service access; and a cushioned seat and fixed sulky for a secure, comfortable ride.

Turf King . . . in 76-inch and 84-inch sizes. For a premier cut. Available only at your participating Jacobsen Distributor. Offer expires August 1, 1985.

Jacobsen Division of Textron Inc., 1721 Packard Avenue, Racine, Wisconsin 53403.

JACOBSEN TEXTRON
Jacobsen Division of Textron Inc.

Engineered from the ground up.

J-135

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strong, flexible pavement which is being used for access roads, parking lots, footpaths and golfcart paths.

Available in heavy duty 36 inch X 12 inch X 1 1/8 size, each three square

foot area block installs quickly with only normal site preparation. This unique block can easily be cut with a hand or power saw to custom fit around contours or obstructions.

Circle No. 191 on Reader Inquiry Card

Small Ford tractors with hydrostatic drive

A foot-controlled hydrostatic-drive transmission is now available on Ford Tractor's new yard tractor (shown above), lawn tractor, and lawn and garden tractor.

The foot pedal is located on the right side and permits easy shifting. A hand-operated speed control lever maintains the forward speed setting with the foot removed.

The speed control can be overridden by the foot pedal and will return to the preset position when the pedal is released. The control lever can be released either by hand or by stepping on the brake pedal.

An all-new optional 48-inch three-blade side discharge mower (in addition to the 42-inch mower) also is available on the yard tractor.

Circle No. 207 on Reader Inquiry Card

National updates Model 84 mower

National Mower Company's "flagship" Model 84 triplex reel mower offers several new options and refinements for 1985, including a foot-operated disc brake and the choice of either a 12-hp Kohler electric start engine or a 10-hp Briggs & Stratton.

The Kohler-equipped model comes with a three-gallon gas tank positioned between the engine and steering post for improved operating visibility, and a dashboard with voltmeter, hourmeter, and remote choke lever. A heavy-duty, front-mount bumper protects the engine. The battery is now placed at the rear axle.

With either engine-equipped Model 84, the user may opt for five or six-bladed reels; bushing or Timken rollers; and a high-speed reel kit.

Olathe MODEL 12 P.T.O. CHIPPER

PORTABLE
DEPENDABLE
ECONOMICAL

- Less than ½ the price of equal capacity chippers
- Fits most tractors from 25 to 100 H.P.
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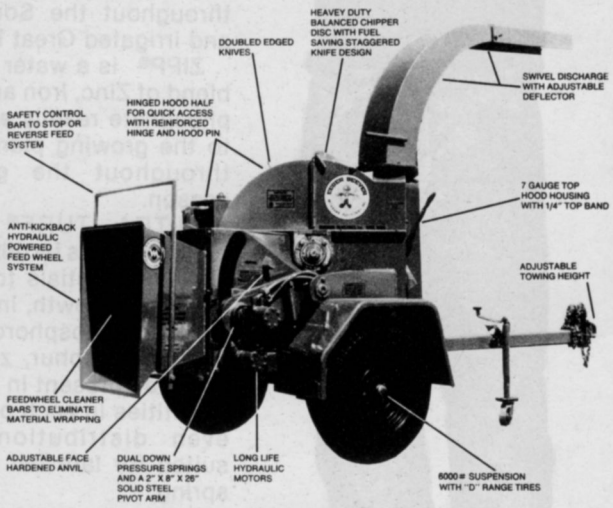
Originality of concept sets the . . .



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Meets ANSI recommendations

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Change knives in 15 minutes-uses 20 to 30 percent less fuel -easy, low cost maintenance

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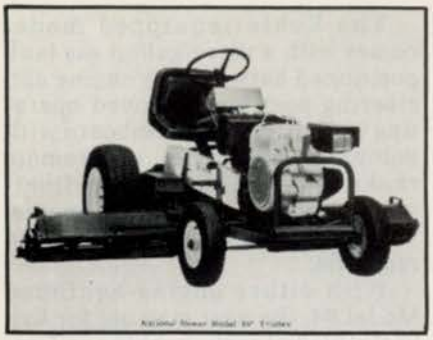

Circle No. 208 on reader Inquiry Card

Durasnap can solve tee, pipe problems

The Durasnap can speed installation of riser tees, reduce cost of adding tees to existing systems, and inexpensively repair broken lines.

Its manufacturer, Dura Plastic Products, says it's easy to use. Connect your lengths of pipe, then glue and snap the fitting on to the new line without cutting the pipe. Or, expose just a shovel width of existing pipe to glue and snap on additional tees. To patch gouged pipe, apply glue and install a Durasnap. Durasnap comes in 40 PVC ¾ x ½ inch and 1 x ½ inch.

Circle No. 210 on Reader Inquiry Card

TOUGH STUFF

The Professionals from Center Plains Industries have the muscle to keep your turf lush, green and healthy. Our premium fertilizers are available throughout the Southwest and irrigated Great Plains.

ZIPP® is a water soluble blend of Zinc, Iron and Polyphosphate readily available to the growing plant. Used throughout the growing season.

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Circle No. 111 on Reader Inquiry Card

Century Jet Pack sprayer is versatile

Century Engineering's new Jet Pack back pack sprayer is small enough to go just about anywhere. It is made of polypropylene, virtually resistant to all chemicals, and can be adapted for left or right hand users. Century says it can be pressurized while in spraying position. The Jet Pack has a four gallon capacity.

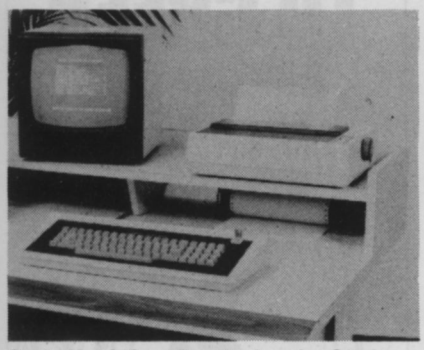
Circle No. 205 on Reader Inquiry Card

Griswold System 390 simplifies irrigation

The operator maintains complete control of complex irrigation systems with the System 390, says its manufacturer Griswold Controls. The System 390 is Griswold's latest offering in computer-assisted irrigation control.

The video screen shows (in plain English) which valves are actuated at any given time. The 390 consists of a main control terminal and as many as 128/32 station field switching terminals. Only two standard (fi14 UF direct burial) wires are required to connect all field station terminals to the central

computer to form a communication line. The 390 does not need battery back-up for memory retention during prolonged power failures. It carries a two year warranty.

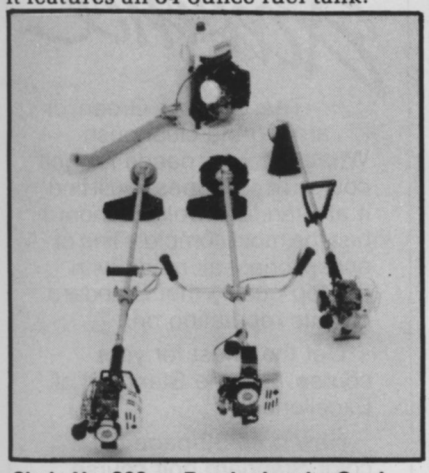


Circle No. 210 on Reader Inquiry Card

Bunton offers new trimmers, blowers

New trimmer models by Bunton are powered with a choice of three Kawasaki engines from 18 cc to 33 cc with the larger units having electronic ignition, solid shaft, and heavy duty reduction gear drive. The trimmers come with quick-feed nylon string, shoulder strap, engine stand, on-off switch, tool kit, and blade guard. Brush and saw blades are also available.

The engine and fan are removable for easy maintenance on the new Bunton blower and will generate 770 cfm. It features an 84 ounce fuel tank.



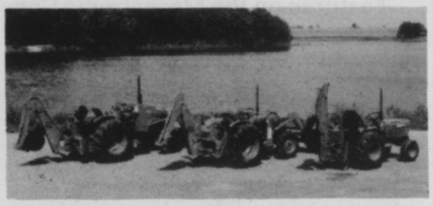
Circle No. 209 on Reader Inquiry Card

American Trencher's new mount for Kubota

American Trencher Inc. introduces a new mounting system for Kubota tractors.

Bradco backhoes mount with Kubota loaders and provide solid attaching points for heavy work. The new mounts provide quick attach for use of the standard 3-point hitch. Additionally, Bradco 3-point cushion hitch backhoes adapt to most models for general applications.

American Trencher offers backhoes in digging depths from 6 to 13 feet in three class categories. Options and accessories are available for specific jobs.

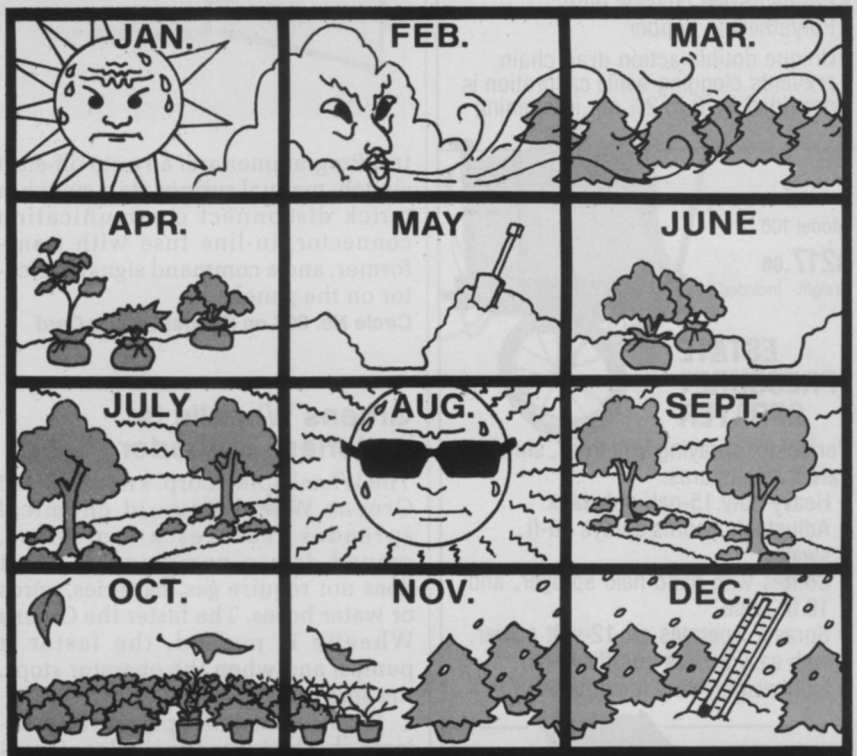


Circle No. 206 on Reader Inquiry Card

New Buckner unit is reliable, economical

Buckner Royal Coach Sprinklers has introduced the Mechatronic Central Programmer, a solid state, electro-mechanical tool which provides reliable, economical central sprinkler programming.

The modular cabinet houses one to four central panels to optimize system control and features separate programming for irrigation and syringe scheduling—23 start times per day for irrigation, 12 start times for syringe cycle. Syringe time is programmable



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- Stays flexible, looks natural.

And FOLICOTE costs up to 50 percent less to apply than any other anti-desiccant or anti-transpirant on the market.

FOLICOTE is a wax emulsion that mixes easily with water and stays mixed. When used as directed, FOLICOTE has been proven in university trials to be effective and non-phytotoxic on a wide range of plants.

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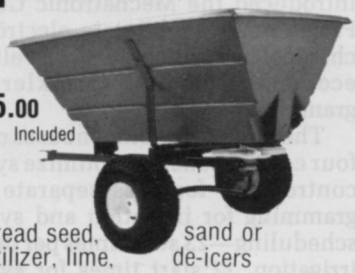
Circle No. 105 on Reader Inquiry Card

Estate Turf Spreader

Model 700



$365.00
Freight Included

- Spread seed, sand or fertilizer, lime, de-icers
- Big 800 lb. capacity
- Ground driven
- Rugged Steel chassis with Polyethelene hopper
- Unique double-action drag chain prevents clogging while calibration is provided by 0 to 2½ sq. in opening

Model 108
$217.00
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ESTATE "PRESSURE" SPRAYER

Perfect for spraying fruit trees, shrubs, yards, or pastures.

- Heavy duty 15-gal. poly tank.
- Adjustable booms sprays 10-ft. swath.
- Comes with hand held sprayer, and 10 ft. hose.
- Sprayer operates on 12-volt power, with easy access on/off switch.
- Lightweight, easy to store, (41 lbs.)

ESTATE "VERSATILITY" WAGON

Model 300

$479.00
(5 ft. bed)

(Add $72.00 for dump option) Freight Included

- 1-ton hauling capacity with hand operated hydraulic dump system
- Heavy structural steel frame
- Removable Side Racks
- High Flotation Tires
- 5 ft., 6 ft. & 7 ft. beds available
- Also, single axle and tandem axle trailers available

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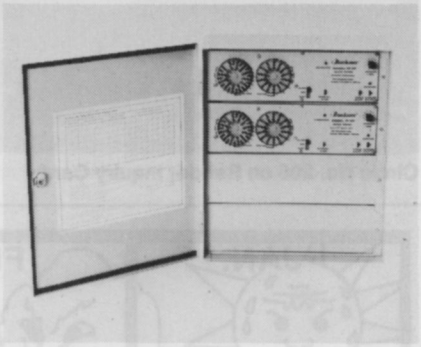
from one to 11 minutes in one minute increments. And the unit has only two central panel signal wires.

Lightning protection is built into the primary and outputs, and a wall mount or pedestal mount is available.

Featured on the Mechatronic Cen-



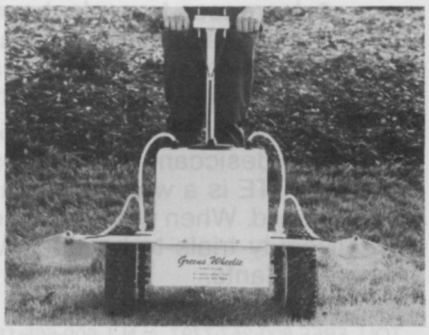
tral Programmer are: an auto off-start switch, manual syringe start switch, a quick disconnect communication connector, in-line fuse with transformer, and a command signal indicator on the panel.

Circle No. 207 on Reader Inquiry Card

Greens Wheelie is motorless spreader

The Wheel Spray Corp.'s new WS-490 Greens Wheelie liquid chemical spreader features a motorless, ground-driven pumping system. It does not require gas, batteries, cords or water hoses. The faster the Greens Wheelie is pushed, the faster it pumps; and when the operator stops, the sprayer stops.

It can be used to apply liquid fertilizers, herbicides, fungicides, insecticides, and growth regulators. The two-wheel, twin-wheel pumps spray a fan of solution six feet wide with an overlap at the center at a rate of 1000 sq. ft. per gallon. The pumping system and 10 gallon, non-corrosive tank ride on large, easy-to-push rubber tires. Stainless steel shut-off valves are operated by handle grips to allow use of nozzles independently.



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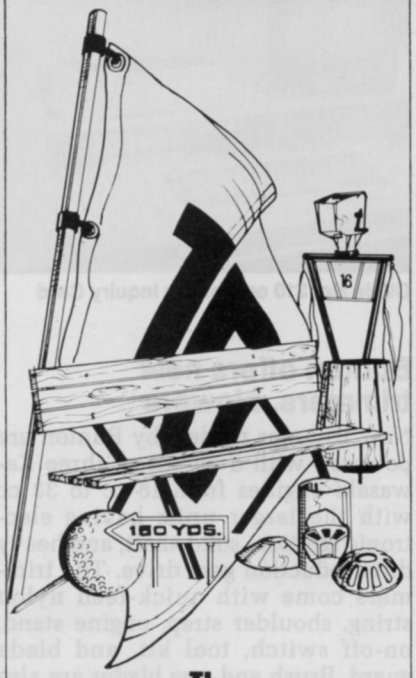
FROM TEE TO GREEN



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Tee. Fairway. Green, or around the clubhouse. Whatever your needs for golf course accessories you'll find it at Standard Golf. Standard has the most complete line of accessories–all made with the top quality that Standard built its reputation on.

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STANDARD GOLF Pro-Line

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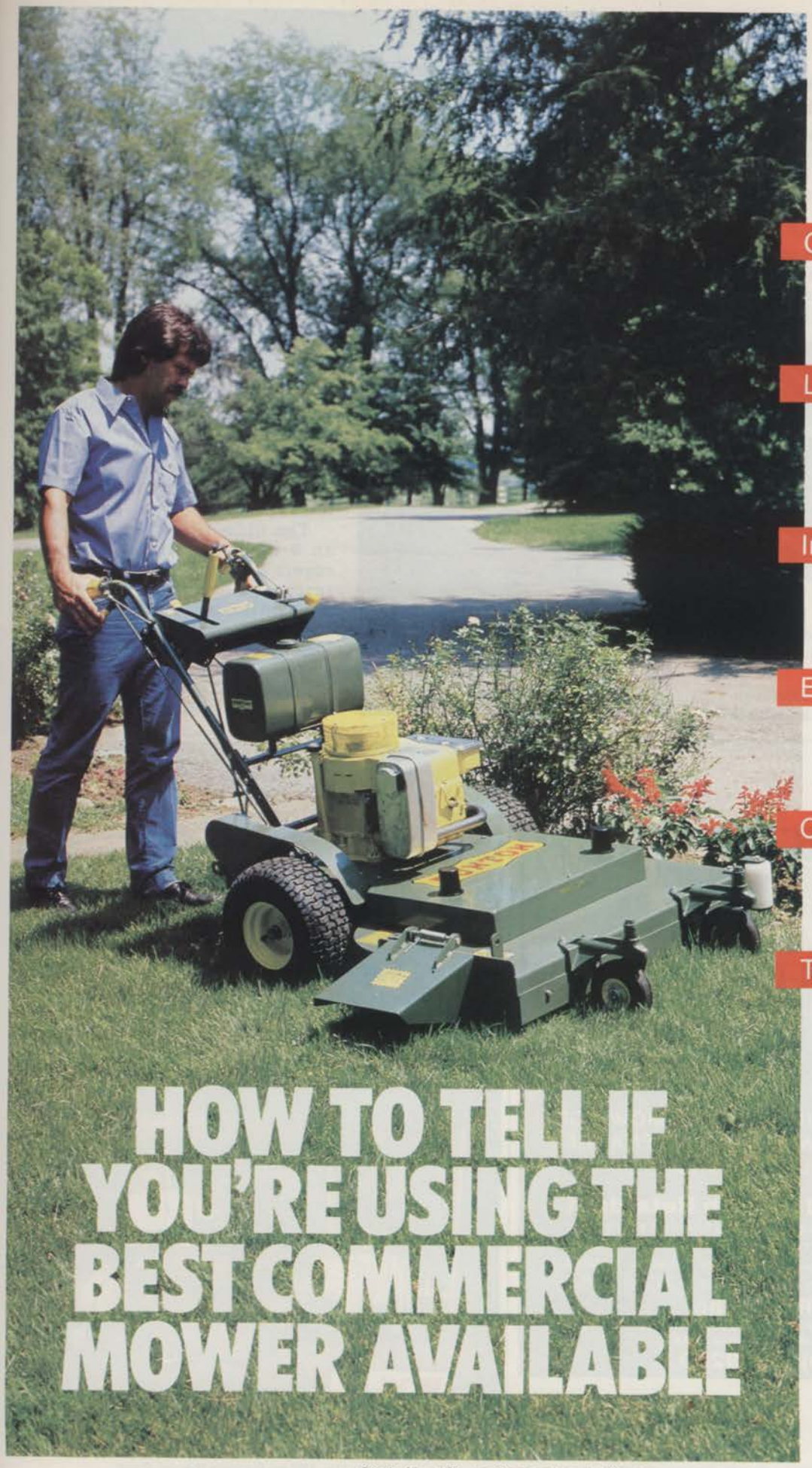

Some would have you believe that all commercial mowers are equal. It's easy to find out if it's true.

Check

for engine options and controls that are functional, efficient and match your needs.

Look

for the assurance of performance in commercial mowers for over 30 years, the Bunton name.

Inspect

the finish, workmanship and quality of materials for season-after-season reliability.

Examine

the construction to see that it is heavy gage welded steel plate, not formed sheet metal.

Compare

the lawn, turf and mulching types and sizes available to match the terrain you maintain.

Test

the quality of cut by calling 502-966-0550 for the name of the Bunton dealer near you.

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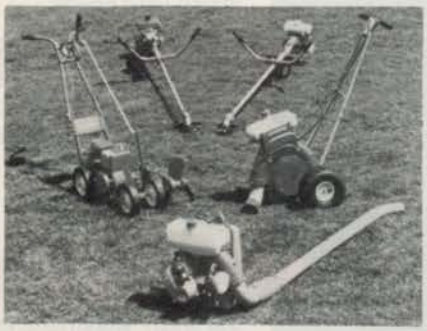
Circle No. 191 on Reader Inquiry Card

Jacobsen adds five new products to line

The Jacobsen Division of Textron Inc. has added an edger, two string trimmers, and two portable blowers to its turf and grounds maintenance equipment line.

The edger is powered by a 3-hp Briggs & Stratton engine and sports a 9-inch-depth adjustable blade.

Both straight-shaft trimmers have manual string advance, twin handles,



and double shoulder harnesses. A 27cc, two-cycle engine drives the Jacobsen J-27, while the J-35 features a 35cc unit.

At just 23 lbs., the Jacobsen J-55 Back Pack Blower comes with a 3.5-hp, two-cycle engine and is capable of sending gusts of 125 mph in a 360-degree rotation.

Jacobsen's J-88 push-type blower weighs 36 lbs. and rides on 10-inch pneumatic tires. It comes with double handles for steady control and can produce velocities of 225 mph rotated 270 degrees.

Circle No. 209 on Reader Inquiry Card

New Jake diesel 4X4 is versatile

Jacobsen introduces a four-wheel drive diesel-powered vehicle that could be a real time saver in a number of turf tasks. It can be used as a mobile power source for rotary or flail mowers, rotary broom and snow-

thrower, seed and fertilizer spreader, and blower.

The vehicle features four-wheel steering and a 24-hp engine. It also has a synchronized eight forward and four reverse speed transmission, four-wheel hydraulic disc brakes, and an all weather cab plus front and rear lights.

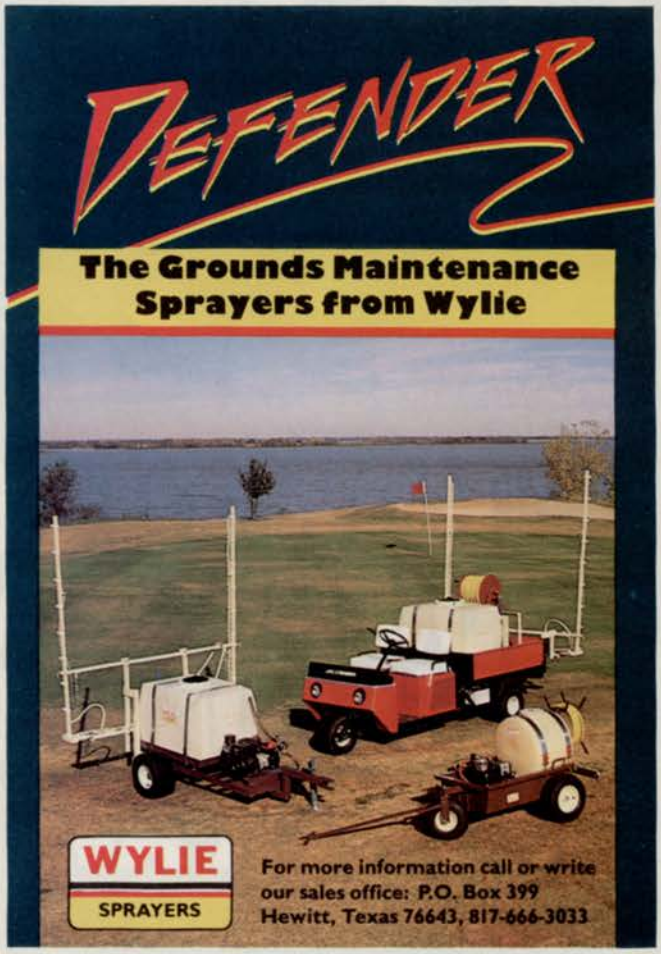
Circle No. 212 on Reader Inquiry Card

Ride-Aire II for high capacity cultivation

Ryan-OMC Lincoln's new Ride-Aire II riding aerator is designed for high capacity core cultivation. Its use will increase oxygen exchange, reduce thatch problems, relieve compaction, and improve water and nutrient penetration in turf. It aerates up to 12,000 sq. ft. per hour.

The Ride-Aire II is powered by an 8 hp commerical engine. It covers a 21-inch swath with a core spacing pattern of 3 1/2 inches. The standard tine is 2 1/2 inch in length and 5/8 inch in diameter. For lawn care, a 2 inch by 5/8 inch tine is available, and for golf course needs tines are offered in a choice of 3 or 3 1/2 inches long and 3/8 or 1/2 inch in diameter.

Circle No. 165 on Reader Inquiry Card



Circle No. 189 on Reader Inquiry Card

The Ride-Aire II features a newly designed frame, front engine guard, foot operated hydraulic lift for the aerating frame, vibration-isolated seat suspension unit, and new type handlegrips. The new Kevular cord increases belt life. The hydraulic roller chain drive has forward, reverse, and transport clutch.

Circle No. 210 on Reader Inquiry Card

Coming Next Month

Landscape Manager's Guide III

Turf Disease Control

GET 1 TO 3 YEARS' WORTH OF FERTILIZER. FREE.

It's hard to believe all the advantages of new Woodace® Briquettes—until you try them. So we'll give you the chance. Free.

Enough Woodace to fertilize one plant or tree is yours for the asking.

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The Growing Choice

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Reinco manufactures six seeders in four different sizes ranging from 800 to 2900 gallons. We also offer three sizes of power mulchers.

We're experts in special design applications too — whatever your erosion control problem.

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Reinco

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Circle No. 169 on Reader Inquiry Card

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Used equipment for sale: 2 Jacobsen F-10 mowers ($5,000 & $7,000). 1 Roseman 7-gang mower, tow type, hydraulic powered with new motors ($5,000). 1 Jacobsen 5-gang ram lift ranger with fairway units ($2,000). 1 Roseman 5-gang ($1,000). 2 six-foot Lawn Genies ($1,000 each). 2 seven-foot Beck sweepers ($2,500 each). 1 five-foot Rogers sweeper ($500). 2 Jacobsen fairway mowing units ($400 each) plus spare parts. If interested call: (205) 821-0969. Beck's Turf-Nursery, P.O. Box 752, Auburn, AL 36830. 4/85

BALL BARRIER NETTING: Made of olefin fibers. 6 1/2 feet and 25 feet high. Strong and tough. Will not rust. Easy to handle. For Driving Ranges and Golf Courses. Keep golf balls from straying off-course. J.A. Cissel Mfg., Co., P.O. Box 339, Farmingdale, N.J. 07727. (800) 631-2234. 5/85

Spray Trucks—4 units 1977 Chev. C50 with 800 gl. tanks, hydraulic pump, reel and agitation system, ready to spray, $5,000 each. 1 unit 1977 Ford F-750 with 1,500 gl. tank, Bean 20-20 pump, 2 Hannay electric reels, ready to spray, $10,000. Call 401-737-4611. 3/85

HYDRO-MULCHERS AND STRAW BLOWERS New and used. **JAMES LINCOLN CORPORATION,** 3220 S. Jupiter Rd., Garland, TX 75041. (214) 840-2440(TX), (800) 527-2304 (except TX) TF

1983 Sprayer on flatbed trailer. FMC 1010 10 gpm, 7 HP Kohler, 200 gallon steel tank, Hannay electric reel with hose. Very Good Condition. $2500. 217-359-7012. 3/85

FOR SALE: Brouwer 3-gang PTO Mower Model 102, EXCELLENT CONDITION $3,000; New Holland 273 Hayliner Baler; John Deere 660 Hay Rake; Ford 221 Disk Harrow, all GOOD CONDITION; PTO chipper; FAIR, best offer. Call (914) 855-1531 Mon-Fri 8:00-4:30. 3/85

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For Sale—1982 300 gallon Myers spray rig. 25 GPM pump, 16 H.P. Kohler electric start engine, less than 30 hrs. use, kept in storage - $42,000. 617-686-5904. 3/85

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'84 Bowie Hydro-Seeder 800 Gal. Trailer Mounted. New—used one day. $10,000.00. Barlen Contracting, 33990 Edna, Farmington Hills, MI 48024. (313)474-6647. 3/85

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BROUWER HARVESTER OWNERS! ELECTRIC DEPTH CONTROL. Save time and money with improved quality control. Make depth-of-cut adjustments, on the move, with one button finger tip control. Allows you to cut longer rows through varying soil conditions. Write or call: Shattuck Turf Farm, 1872 N.W. 82nd, Des Moines, IA 50322, (515)278-5255. Patent pending. 3/85

HELP WANTED

LANDSCAPE MAINTENANCE PESTICIDE APPLICATOR—Commercial maintenance contractor seeks knowledgeable individual with experience in all aspects of liquid fertilizer and liquid pesticide applications. Horticultural degree and/or experience of two to three years a must. Send resume and salary requirements to: Manager, Tecza Brothers, Inc., Route 2 Box 67, Elgin, IL 60120. 3/85

EMPLOYMENT OPPORTUNITY-Landscape - Operations Manager wanted, requirements as follows: Experience and working knowledge in commercial and residential landscape maintenance and construction. Knowledge of equipment, turf, plants, chemicals and irrigation. Management experience, including budgeting, personnel, scheduling and bidding, (some landscape design experience preferred). Responsibilities, management of companies landscape maintenance and construction operations. Send resume and salary requirements to Clearwater Landscaping Co. Inc., P.O. Box 848, Sun Valley, Idaho 83353 - Atten: Ed Sinnott. 3/85

Go West Young Man: Fast growing Lawn & Tree Care Company needs manager for tree care division. Horticulture background with degree preferred. Must be willing to train on the job and work in the field as well as develop sales and program. Excellent benefits and chance to grow with one of the best companies in the nation. Write WTT Box 358. 3/85

LANDSCAPE MAINTENANCE DEPARTMENT MANAGER—Established quality oriented Detroit landscape firm seeks bright, aggressive person to oversee expanding landscape maintenance division. Responsibilities include business development, account, and general department administration. Must have industry related experience to qualify. Advancement opportunity and excellent company benefits. Please send resume to: Wm. Reinhold Landscape, 23216 Telegraph Rd., Flat Rock, MI. 48134. ATTN: Melanie Reinhold Sawka. 4/85

HORTICULTURE. Landscape planting and maintenance: turf, tree care, soils, general horticulture. Permanent, seasonal; entry level, supervisory. Growing organization. Resumes only: Frank Serpe, Director of Horticulture, Central Park Conservancy, 830 5th Ave., Room 103, New York, NY 10021. 3/85

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EVENTS

APRIL

Turf and Landscape Institute, April 8-10, Anaheim Convention Center, Anaheim, CA. Contact Ed McNeill, Southern California Turfgrass Conference, 1000 Concha St., Altadena, CA 91001. (818) 798-1715.

Southeastern Turfgrass Conference, April 15-16, Rural Development Center, Tifton, GA. Contact Glenn W. Burton, Coastal Plain Experiment Station, Tifton, GA 31793. (912) 386-3353.

Control of Weeds and Ornamental Insects and Diseases, April 17-18, College Park, GA. Contact Bill Glasingame, Stephenson Services, 2444 West Point Road, P.O. Box 87188, College Park, GA 30337. (800) 241-3343 or in Georgia (800) 822-4601.

MAY

Arizona Turf, Landscape, and Irrigation Conference, May 2-4, Ramada Airport Resort, Phoenix. Contact Billie Reynolds, Arizona Landscape Contractors Assoc., P.O. Box 27312, Phoenix, AZ 85282. (602) 968-8179.

Land Design III, Fertilization Programs, and Drip Irrigation courses, May 7-9, Cal Poly University, Pomona, CA. Contact Wayne Smith, program director, 3801 W. Temple Ave., Pomona, CA 91768. (714) 835-5550.

Menninger Flowering Tree Conference, May 16-17, Cypress Gardens Quality Inn, Winter Haven, FL. Contact Ellen M. Landry, FNGA state office, 5401 Kirkman Road, Orlando, FL 32819. (305) 345-8137.

JUNE

University of Massachusetts Field Day, June 26, Massachusetts Turfgrass Research Station, South Deerfield, MA. Contact Dr. Joseph Troll, Plant & Soil Sciences, Stockbridge Hall, University of Massachusetts, Amherst, MA 01003. (413) 545-2353.

To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 7500 Old Oak Boulevard, Cleveland, OH 44130.

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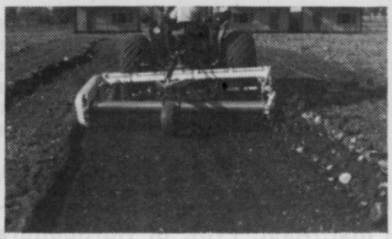

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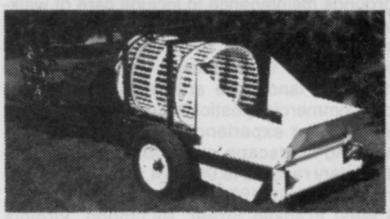

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LANDSCAPE MAINTENANCE FOREMAN to do quality oriented residential landscaping. Associate degree or comparable experience. Must be motivated and have working knowledge of turf and ornamentals. Mechanical ability desirable. Good compensation program. Good opportunity with growing company. Schrauf Landscaping, 35482 Chestnut Ridge, N. Ridgeville, Ohio 44039. 216/327-8873. 3/85

LANDSCAPE SUPERINTENDENT—Virginia Commonwealth University is seeking a Landscape Superintendent in the Grounds Department of Facilities Management Division. Incumbent responsible for planning all horticultural activities, grounds maintenance, landscape operations, budgeting, mechanical needs and service contracts. Other duties include procurement, maintenance of seasonal plants, supervising turf maintenance, equipment repair/maintenance, irrigation systems; diagnosis and correction of plant disease; assisting in greenhouse management; procurement of supplies and materials including obtaining specifications and submission of bids; conducting various personnel functions; interviewing, hiring, evaluation, etc.; and supervision of all grounds maintenance to include care of walkways, parking lots, decks, alleys, roads and common areas in addition to coordination of snow removal crews. Qualifications: Prefer degree in horticulture, landscape architecture or related fields; commercial pesticide applicator's permit and extensive experience in grounds maintenance and landscape operations, supervisory skills. Salary range: $18,061-$24,672. Submit a resume by March 29, 1985 to: VCU Personnel Office, 923 West Franklin Street, Richmond, Virginia 23284. An Equal Opportunity Affirmative Action Employer. 3/85

LANDSCAPE MAINTENANCE CREW FOREMAN—Commercial maintenance contractor seeks knowledgeable and hard-working **experienced** crew leaders. Ability to work with men and get the job done necessary. Horticultural degree, Spanish and mechanical ability a plus. Send resume and salary requirements to: Ed LaRocca, Tecza Brothers, Inc., Route 2 Box 67, Elgin, IL 60120. 3/85

Sales Representative/Supervisor: Northern New England's Largest Utility/Private Tree Care & Landscape Service Company seeks experienced, professional person to join our expanding management team. Related degree and 3-5 years experience, minimum requirement. Excellent company benefits. Send resume and salary history to Lucas Tree Expert Co., P.O. Box 958, Portland, ME 04104. 3/85

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LANDSCAPE MAINTENANCE AND CONSTRUCTION SUPERVISORS: Rochester, N.Y. Responsibilities include production and sales - Commercial/Residential. Excellent career opportunity for responsible, ambitious, and self motivated individual. Send qualifications and employment history to: P.O. Box 92, Webster, N.Y. 14580. 3/85

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Inst./Asst. Prof. of Horticultural Technology (tenure track) to begin 9/85. Teach Horticultural Courses-Nursery Culture and Operations, Woody Plant Materials, Landscape Implementation, Interior Plants and Plantscaping; assist in arranging summer work exp. for students and in horticultural facilities operations; willing to participate in possible part-time instruction during summer term. Qualf.: masters in plant science/horticulture with a strong leaning toward practical horticulture applications; 3 yrs. commercial or other field exp. in horticulture, preferably in nursery, landscape production/management; training in entomology, pathology and soils desirable. *Apply by April 12, 1985 to* Dr. Lewis Roberts, Director, Thompson School of Applied Science, Barton Hall, University of New Hampshire, Durham, NH 03824.
UNH is an AA/EEO employer.

SOD FARM MANAGER: 500 acre Chicago-area operation seeks qualified manager. Involves production, irrigation, and harvesting. Excellent salary and benefits. Send resume to WTT Box 354. 3/85

LANDSCAPE BUYER/NURSERY MANAGER—Large growth oriented landscape contracting firm in Washington DC/Baltimore area seeking ambitious, experienced person with Horticultural Degree, purchasing experience and familiarity with wholesale nurseries. Responsibilities include locating and buying materials, nursery management, inventory control, promotion of company image. Full benefits package. Please send resume to WTT Box 357. EOE. 4/85

LANDSCAPE INSTALLATION AND MAINTENANCE SALES-COMMERCIAL Well established, aggressive Washington Metro. firm is searching for the best individuals to expand its Sales and Marketing Department. Applicants must be experienced in product knowledge as well as professional sales and service technique. Excellent salary, commission, benefits and a product you'll be proud to sell. All resumes confidential. Advancement unlimited. Write: P.O. Box 22022, Alexandria, Virginia 22304 3/85

LANDSCAPE MAINTENANCE SUPERVISOR—Commercial maintenance contractor seeks qualified person for Production Supervisor position. Horticultural degree and/or two to three years experience leading crews a must. Candidate must be ambitious, knowledgeable and hard-working. Mechanical ability and Spanish a plus. Send resume and salary requirements to: Manager, Tecza Brothers, Inc., Route 2 Box 67, Elgin, Illinois 60120. 3/85

USED EQUIPMENT

HI-RANGERS AERIAL BASKETS 65', 57', and 53'. Skyworkers aerial baskets 65', 50', 40'. Vermeer stump cutter 1560,6. Vermeer tree spade 66, TS 44. Asplundh bucket and brush chippers, Bean sprayer, 9 ton trailer. Parkway Tree Service, 12026 W. Cherry, Wauwatosa, Wisc. 53226. (414) 257-1555. TF

1978 Skyworker 1045A, Bought new on 1978 International, 40,000 mi. Dump Chip Box, Aux. engine, Hydraulic tool system, Garage kept, Lost contract, must sell. $25,000. 215-589-5164. 3/85

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1982 Grasshopper mower. 52" cut with impeller driven rear hopper, 16 hp twin cylinder. Briggs-Stratton engine. Twin hydrostat transmission. Good condition. Under 300 hours. Call (216)536-6606. 3/85

For Sale — 1978 Princeton Sod Harvester, Model #4020, with John Deere diesel. Ready for work! Looks good — Runs Good! $17,500. Grass Farm, Morgan Hill, CA. (408) 226-9775. TF

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WANTED

Wanted to buy **HYDRO SEEDER**. Please send photo. Johnson Hydro Seeding Corp., 13751 Travilah Road, Rockville, MD 20850, 301/340-0805. TF

Wanted: Used walk behind sod harvester with cut off attachments or used tractor mounted model. 601-378-2006, Greenville Lawns, Inc., Rt. 2, Box J-9, Hollandale, MS 38748. 3/85

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Soon after the final black plumes of acrid smoke settled over Pearl Harbor in 1941, Japanese Admiral I. Yamamoto uttered the words that were soon to haunt Japan and her Axis partners, "(We have) awakened a sleeping giant ..."

Those words foretold the course of history.

They still hold prophecy in the Hawaiian islands, but this time, the giant has changed guises—it is a Green Giant ready to rear its head.

There was a time when Hawaii meant grass skirts, thatched huts and coconuts. Life was simple, almost primitive. There are still parts of the 50th state, thankfully, where that lifestyle has been preserved. No where else in the U.S. is over $5 million a year spent on coconut tree trimming; few landscapers other than those in Hawaii have to coax green, growing plants to emerge from jet black lava rock.

Hawaii. Truly a land of almost quirky contrasts.

But at the very root of Hawaii's appeal—the lush, tropical vegetation—germinates a Green Industry that is in its infancy.

Professional landscaping in Hawaii is a phenomenon reserved mainly for hotels, office parks, and golf courses. The typical Hawaiian landscape is trees and shrubs—no manicured lawns, no elaborate flower beds.

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Talking to landscape architects, contractors, superintendents, equipment and chemical dealers in Hawaii, the feeling seems to be pretty much the same—the area is wide open to knowledgeable entrepreneurs who can exorcize the dollar signs from their eyes. The need and desire for competence in landscaping is ripe.

Tourism will continue to grow, and with it the need for more hotels and golf courses. There are about 55 golf courses already scattered among the five main islands. Golf is a consistent island breadwinner, and, from all indications, will continue to be.

Looking at the broader picture, the U.S. interest in the Pacific is vital—both militarily and commercially. The area is pivotal to our own trade relations with Japan.

Hawaii's continued growth bodes well for the future of agronomics there. The challenge is sorting out, consolidating and retrenching a fledgling industry into a giant who doesn't destroy, but instead nurtures.

Maureen Hrubach

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Balan® – (benefin, Elanco)

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Only seven weeks after seeding, REBEL provides a rich carpet of dense, fine-leafed turf on Washington D.C.'s Congressional Country Club, Bill Black, Greens and Grounds Chairman.

Proven performance makes Rebel number one.

TURF TYPE TALL FESCUE

University tests across the country have proven most tall fescues have some good qualities; but in overall performance Rebel beats them all.

1982 Turfgrass Quality Ratings for Tall Fescue Varieties Tested at Eleven Locations in the United States

University Test Location, Quality Ratings 1-9; 9 = Best

Variety	NE	KS	MO	IL	GA	KY	MD	MS	NC	NJ	VA	AVERAGE
REBEL	6.7	7.7	7.0	5.6	8.2	7.5	6.5	4.8	7.0	7.6	6.8	6.9
Falcon	6.3	7.6	6.8	5.3	7.7	6.9	6.6	4.8	6.2	7.3	6.4	6.5
Olympic	6.3	7.3	—	5.0	8.1	6.5	6.3	4.2	5.8	6.6	6.4	6.3
Clemfine	—	7.2	—	—	7.3	6.3	5.9	4.1	6.3	4.6	5.9	6.0
Galway	—	7.0	—	5.1	7.5	6.0	6.4	4.8	6.1	5.1	5.5	5.9
KY-31	5.1	7.2	5.5	5.3	6.8	6.3	5.2	4.1	5.9	3.6	5.4	5.5

In these trials, turfgrass varieties were evaluated for appearance, establishment and quality of stand, resistance to drought and disease, and mowing qualities. REBEL took top honors in all-around attractiveness and performance:

- Resists heat, drought and disease
- Fine-textured (30% finer-leaved than Kentucky 31)
- Dense stand (188% denser than Kentucky 31)
- Excellent shade tolerance
- Rich color
- Fast establishment

For an all-around, top-performing tall fescue, try REBEL. Test it for yourself.

Lofts Inc.
Bound Brook, NJ 08805
(201) 356-8700 • (800) 526-3890

Lofts/Maryland
Beltsville, MD 20705
(301) 937-9292

Lofts/New England
Arlington, MA 02174
(617) 648-7550

Lofts/Great Western
Albany, OR 97321
(800) 547-4063

Sunbelt Seeds,
Norcross, GA 3
(404) 448-9932

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